THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

ON THE IMPORTANCE OF FARMERS GIVING PERSONAL ATTENTION AND LABOR TO THEIR FARMS.

To the Editor of the Farmers' Register.

I have been a subscriber to your agricultural work from its commencement, and yet never attempted to aid you in your labors, notwithstanding the gentle rebuke you gave me, and the invitation to contribute my mite to the information which is due from every man of experience, who is engaged in the cultivation of the earth. The truth is, that I entered the field of agriculture nearly 45 years ago, with small means, and necessity drove me to hard labor, with the very few slaves I possessed, and left me no time to keep a journal of my little operations; and my family increased faster than my profits, so that when the scale of my operations extended, so as to take me away from manual labor, I found even less time to commit to paper the results of such experiments as grew out of my pursuits; and I have no recourse now to any thing but a defective memory, to enable me to present any thing useful to the present generation. Indeed, Mr. Editor, the course of business is very much changed since I began my operations. At that day, there was a great deal of land to open, and it was not thought disgraceful to take hold of an axe and set a good example to the negroes—and that gave a habit of labor which led on the young to follow it up through the year at any sort of work that came in the way. I pursued this course myself for seven years, till the investments of my profits put it out of my power to do any thing more than lay out the plan of operation, and see that others did their duty in the execution. And here let me remark upon another very important change that has been brought about: That very useful class of men called overseers, in a slave-holding country, were employed upon a share of the crop; and it was upon the following principle:—A young man expected to make his living in this way, and had neither land nor labor except that of his own body and mind.—The man who had land and negroes from which he wished to derive profit, entered into a sort of partnership with the young man, that he would furnish the land and a certain number of laborers—we will suppose seven. It was understood that the young man was to work regularly with these negroes, and at the end of the year was to have the profits of his own labor, which was the eighth part, leaving the profit of the labor of the negroes to the master. Thus the young man received his full share for his labour, and paid nothing for the land he cultivated; besides which, he had his house, provision and fuel for himself, and his wife and children, if he had any; while he was earning a reputation, (if he was good for any thing,) which, in the end, would be a fortune to him. And let me tell you, sir, that this training gave him a knowledge of what could be done; it gave him strength of body and mind, and habits of industry, which would generally stick by him through life. When after beginning with a small number of hands—three, four, five or more, he became qualified to manage too many to justify his laboring in person, his profits increased to a share and a half, two shares, or even more, till at length he was enabled to establish himself; and in process of time, perhaps employed young men to begin as he had done; and his experience qualified him to be a judge of others.

I reckon, sir, you begin to think you had better have let me off, than have your Register filled with what I have no doubt will appear to many of your readers useless stuff. But when I tell you I ascribe the little success I have had in providing the means of raising a large family, to the seven years of hard labor I endured, I trust I shall be excused for endeavoring, in this way, to encourage the young men of the present day to conform, in some degree, at least, to the plan of life here laid down.

I come now to the change adverted to in the former part of this letter.—After I had added to my business, by the purchase of another farm, and had had several valuable agents, being in want of an overseer, a young man was recommended to me. While in conversation with him, I asked if he ever worked with his people? He said—Oh, no! he considered it disgraceful to work with negroes. I told him I had done it seven years, and never thought I had been disgraced by it. I told him I never bound an overseer in writing to work, because if he required that, I did not expect much from him; but I wanted to know his habits. You must know, that by this time, our country was becoming more of a farming country than it had been, in consequence of the increase of arable surface, by clearing, as well as the exhaustion of some of the fields, which caused the owners of the soil to turn their attention more to improvement, which conflicted with the immediate interest of the overseer, by its prospective character. This brought about the habit of giving standing wages—broke up the co-partnership, and took away the interest of the overseer, in the fruits of his year's work. You know, sir, without my telling you, that the way to insure a man's fidelity to his trust, is to make it his interest to be faithful. Do not understand me as joining in the general denunciation of overseers, as the most faithless men in the world. Far from it. I have been fortunate in finding among them, as much, or more fidelity, than in other classes of society. But they are men, and consequently, are liable to the frailties of men; and when we employ one that cannot overcome selfish motives, and attend to the interest of his employer, the mischief is incalculable, particularly as the time approaches when he is to leave the business he is engaged in, and receive the same wages as if he had done his duty.

The intention of the foregoing remarks, is to show the great imporrance—indeed, the absolute necessity of more personal attention from the owners of the land, and labor. And this necessity is rendered more imperious by the great and sudden rise in the price of labor. We have interposed between the soil cultivated, and the labor employed

in its cultivation, an agent who has no interest in either, except that which arises from his character and standing in his occupation. And although this, in many instances, operates as a powerful stimulus, and when accompanied with sound moral principle, is sufficient for the accomplishment of our objects, both as to immediate profit and improvement of soil, which is ultimate. Yet, in very many cases, these are wanting; and great loss, perhaps in the end ruin, is the inevitable consequence. Why, then, cannot those, who have but one farm, and who are young, "*take hold*," and be farmers indeed? Among their laborers, they may find here and there, some who are faithful, and have sufficient intelligence to follow the directions of the master; and when they possess these qualifications, will do so with an eye singly to the wishes and interest of the master. Besides the principal, he can have subordinate agents, particularly at the head of his ploughmen. The master can, by this mode, give more encouragement to his slaves. He can understand their characters—can reward and punish with more judgment. In a word, he can feel more responsibility, and suffer less pain under that responsibility, than when he must depend upon another. For if any thing disagreeable occurs between the overseer and the slave, he cannot positively know the merits of the question; and if he leans too much to the tale of the slave, he overthrows the authority of the overseer. On the contrary, if he turns a deaf ear to the complaints of the slave, he incurs the risk of unnecessary severity. Let me not be understood to convey the idea, that this class of men can be dispensed with: they must always be in demand. There are too many cases in which they cannot be dispensed with; and in a slave-holding country, there is no more useful and necessary class of men. Yet, many salutary consequences will flow from the immediate agency of the owner of the soil. He will set an example of more vigilance in these intermediate agents. He will put out of employment those who do not, like him, consult the ultimate interest of the farm, as well as the immediate profits thereof, in which he is more intimately concerned. He will reason upon causes and effects, upon his own operations and experiments, which is not to be looked for from those who are tied down to the experience of those who have gone before them. Consequently, more reliance is to be placed upon the results of his own observation, accompanied by the reasoning of his own mind, than upon facts detailed by others, who may, for want of this reasoning, lead him into erroneous conclusions from their facts. He will often find occasions during the year, when he can devote more attention to the interest of the farm, than can be expected from one whose immediate interest does not prompt him to watch these little intervals of time, of what might be called leisure; though in truth, this leisure might be employed in consulting the benefit of the crop. In short, Mr. Editor, there is nothing, but the ownership of the soil, which can inspire that lively concern in its improvement, which will enable the manager of it to take advantage of all circumstances and occasions to consult its future productiveness, when by doing so there is some little conflict with immediate profit, though not sufficient to induce the judicious farmer to neglect it. And this reasoning would apply as well to the present owner, as the man who is placed between the immediate and ultimate profit of the land and labor, if their situations were reversed.

The communication above, was written more than twelve months ago. I declined to send it, because there is too much of egotism in it. Having come across it to-day, in turning over my papers, and shown it to a friend who is with me, he has prevailed upon me to send it to you. If you think it worthy of a place in your valuable collection, publish it. I must be allowed, however, to depart from that, which, in most cases, seems to be adopted by your correspondents, of signing my own proper name to it. If you decline to insert it in your journal, be assured you will give no offence to one who is less of a farmer than

A PLANTER.

ON PREPARING AND MANAGING TOBACCO PLANT BEDS—AND SOME REMARKS ON THE TOBACCO CROP.

To the Editor of the Farmers' Register.

It is not my purpose to inquire into the consequences which will flow from the extensive cultivation of tobacco in the state of Virginia. I presume, however, it must be manifest to all reflecting men, that it will necessarily have a very injurious effect upon the system of farming, which a few years ago was carried on with so much spirit, and gave such fair indications of resuscitation to our exhausted country. The quantity of forest land, so much reduced already as to drive many to the west, will be still farther diminished, by the efforts to produce the kind of tobacco for which the manufacturers give such encouraging prices, as well as by the amount of wood used in burning plant land, and curing tobacco made on the old ground. My present object will be to point out the means of saving fuel in burning plant land; and as experience is the best guide, I may perhaps succeed better in elucidating the subject, by giving a history of my practice. In the spring of 1820, before the grass went to seed, I cut down a piece of sapling land at the head of a bottom, raked off the leaves, made a fence around it with the poles that were cut from it, and penned my cattle on it till it was very rich. (It was high up the bottom, and very indifferent plant land before I cow-penned it.) The next winter, when I designed to burn it, it continued so wet that I was compelled to give it up, notwithstanding I had cut a ditch around it. I covered half of it (thirty-five yards by seventeen) with brush (after laying skids about four feet apart) about two or three feet deep, and laid the poles of which the fence was made, all over it, intending to burn it the next winter. But it did not occur to me, that after the winter set in, it would never dry any more until the summer. So I missed the chance again. I added a little brush and wood in those spots where it appeared to be wanting. The next fall, about the latter end of October or first of November, I put fire into it, when, by the dampness of every thing around, it was safe to do so. The heat operating at once all over the patch, was intense—so as to drive every body away to the distance of at least fifty yards. I suppose it would be safe to say, that not more than a third of the fuel was used, which is employed in the customary way of making a log fire,

and hauling it with hooks as it burns down. Besides that this most distressing and unwholesome operation, of all that we perform, is avoided—while the burning is a great deal more uniform. Not a spot could be found within the outer edges, which was not equally burned with the rest; and every spot yielded its fair proportion of plants. The first time it was drawn, I planted my manured lot of 40,000 hills, with plants as large as a man's hand, and afterwards, my overseers on two adjoining plantations, drew for their old ground, at least 100,000 more, of equal size. I doubt whether the same amount of land, taking the average, burned in the ordinary method, would yield more than one-third of the plants of similar size, by the period of the planting season—although, perhaps, three times the quantity of wood was used in burning. I am aware that few men could look forward far enough to bestow the necessary labor to give the same result—particularly, where an overseer is consulted, who is naturally unwilling to bestow so much labor, perhaps, for some one who is to follow him. But although the same amount of benefit may not be derived by making use of the land thus treated, at an earlier period—yet great advantage accrues even by allowing it to remain till the ensuing fall. The fall twelvemonth is now the time I generally select for making use of it. Another great advantage attends this practice. As soon as it is burnt, (say in November,) it is prepared exactly as if it was to be sown immediately. So that if the weather is untoward at the time you would wish to sow it, you can sow upon frozen gronnd. If it is suitable, you can give it a light raking. Nothing then, can prevent your sowing in as good time as you think proper.

Although I consider cow-penning the best mode of manuring for plants; yet it will not do to confine ourselves to it. The winter is my time for packing brush and wood on plant land for the fall twelve months after. I select a spot in the woods—rake it clean—lay skids about four inches diameter, and about four feet apart—lay on the brush across them, going backwards with the layers till it is all covered—then, beginning at the buts, travel on the wood which is laid across them and mauled small as is convenient, till all is covered. But before the brush is put on, cover it with manure according to the natural strength of the land. The manure must have no grass seed in it. Stable manure, when the horses are fed on fodder, is very good. Those who have tobacco stalks, will find this a valuable mode of using them. In some instances, however, (particularly where the land is rich,) I pack it without manuring—the covering itself, and the gradual decay of the twigs and bark, impart fertility to the soil, and lighten it up, so as to make it favorable to the growth of plants.

In a slave-holding country, suited to the growth of corn, wheat, and tobacco, this mixed crop furnishes the most regular and profitable employment for a set of human beings, whom the master is bound by every motive, to maintain all the year: while, in those countries cultivated by free laborers, the farmer gives employment to them when required; and when he has accomplished the business of the different seasons, leaves to them the care of their own families. This circumstance, added to the present high price of slave labor, and the high price of tobacco, consequent thereon, not only leads many to engage more extensively in its culture, but many others to adopt it, who had not done so before. I may therefore, as the season advances, for the information of this last class, trouble you with some further observations upon its management, which may be useless to those who are experienced, and as well or better acquainted with it than I am.

A PLANTER.

[The writer of the two foregoing communications has not even trusted *us* with his name—but we can scarcely err in ascribing them to the pen of a gentleman whose name would stand, as authority, among the highest—and most deservedly so, on account of his long and remarkably successful course as a cultivator of the soil, as well as for his well earned elevated station in society. His future communications will be especially welcome, as presenting the facts and opinions of a truly practical tiller of the earth.

In addition to his promised observations on tobacco culture, we shall be pleased if our correspondent will furnish all the details of the usual most laborious and costly operation of burning patches for tobacco plants, and their other preparation and management. No other writer in this journal has fully described this branch of tobacco culture—and the description would be curious and interesting to those who know nothing of it, and will be so to all readers hereafter, when the entire destruction of the present covering of growing wood shall necessarily put an end to the present mode of preparing plant beds. Without such details of the usual process, strangers will find it difficult to believe that the plan recommended by our correspondent, apparently so costly in labor, and wasteful of fuel and manure, can be (as doubtless it is,) more economical in all these respects, than the usual mode.]

CONDITION OF THE DESCENDANTS OF A NUMBER OF EMANCIPATED SLAVES, IN PRINCE EDWARD COUNTY.

To the Editor of the Farmers' Register.

Richmond, March 22d, 1836.

You expressed a wish (page — vol. III,) to obtain information in relation to the history of the emancipated people of color in Prince Edward; I presume those emancipated by the late Richard Randolph more especially.

More than twenty-five years ago, I think, they were liberated, at which time they numbered about one hundred, and were settled upon small parcels of land, of perhaps 10 to twenty-five acres, to each family. As long as the habits of industry, which they had acquired while slaves, lasted, they continued to increase in numbers, and lived in some degree of comfort—but as soon as this was lost, and most of those who had been many years in slavery either died, or became old and infirm, and a new race, raised in idleness and vice, sprang up, they began not only to be idle and vicious, but to diminish instead of increasing, and have continued to diminish in numbers very reg-

ularly every year—and that too, without emigration; for they have almost without exception, remained together in the same situation as at first placed, to this day. Idleness, poverty, and dissipation, are the agents which continue to diminish their numbers, and to render them wretched in the extreme, as well as a great pest, and heavy tax upon the neighborhood in which they live. There is so little of industry, and so much dissipation amongst them, that it is impossible that the females can rear their families of children—and the consequence is, that they prostitute themselves, and consequently, have few children—and the operation of time, profligacy and disease, more than keep pace with any increase among them. Whilst they are a very great pest and heavy tax upon the community, it is most obvious, they themselves are infinitely worsted by the exchange from slavery to liberty—if, indeed, their condition deserves that name.

JAMES MADISON.

[The facts stated in the foregoing communication are both interesting and important. We are greatly indebted to our esteemed and well informed correspondent for his compliance with our request, and have only to regret that he did not enter more into the details of so fair and decisive a trial of the effects of negro emancipation, made under the most favorable circumstances. In this case, the slaves who were emancipated had been trained to labor—they were abundantly provided with fixed farming capital—and they had, and their descendants still have, in addition, a continual demand for their labor, in the boating on the Appomattox—an employment which they prefer to all others, because it is the nearest to idleness. Yet with every advantage, and through a long course of time, their prosperity and even their numbers have been diminishing, and their condition has gradually become worse. A more full experiment cannot be adduced, nor a more decisive result.]

For the Farmers' Register.

THE HACKBERRY PROPOSED FOR LIVE HEDGES.

I doubt much whether a live fence can be made *proof* against hogs. At any rate, it is not probable that fences of this description will be much attempted in Virginia for a long time to come. I have long thought that the hackberry tree promised to answer the purpose better than any other that I have seen. It will grow to a very large tree, under favorable circumstances—but when browsed down by stock, it makes the most dense and unyielding shrub I have ever seen. I know several bushes of it through which it would be difficult for a sparrow to creep. About twenty years ago, I sowed a small lot with the berries; they vegetated very well—but were ploughed up, through mistake, by a servant, in my absence. There are no bearing trees in my immediate neighborhood; and though anxious to try again, I have been unable to procure fresh berries. Nature has so formed such seed, that they will never vegetate after once drying; were it otherwise, the power of man could not prevent their taking possession of the earth. This is the case with the seed of the hawthorn, the rose, and in some measure, with the grapevine and the apple tree.

M.

CLOVER AND GYPSUM NOT SUFFICIENT FOR DURABLE IMPROVEMENT. VALUE OF EASTERN SHORE LANDS.

To the Editor of the Farmers' Register.

Eastern Shore of Maryland,
February 15th, 1836.

I regret to find by your address to readers and correspondents, in your No. for February, that you have cause to complain of the want of co-operation. You would find it difficult by your own exclusive efforts, to keep such a work as yours in successful operation. I owe something more than my annual subscription to the Register, and desire to make suitable returns. I may aid in filling your columns, but I fear you will find my contributions of but little value.

Some of your correspondents, seem to entertain the opinion that clover, in conjunction with gypsum, is a means of solid and permanent improvements. My experience has led me to a different conclusion. Many years ago, I purchased a small farm—the soil had been originally fertile, but reduced in its early cultivation by tobacco—afterwards, by the improvident three-field system. This farm was cultivated by my directions—my vocation not permitting much of my personal attetion. I had it divided into five fields, one cultivated in corn, two in wheat, one of those I sowed in clover, and plastered the first and second year, after gathering the wheat. The growth of clover was rich and abundant. My clover fallow produced crops of wheat far beyond expectations. I expected progressive improvement, and the means to be so easy that I paid but little attention to collecting putrescent manures. I succeeded well for two rounds; but my crops of wheat greatly diminished in the third—though clover still continued to flourish, and Indian corn grew well. This system had been an innovation in the neighborhood. I had been a little proud of success, but I deemed it unwise to pursue it at a loss. I abandoned clover and plaster, divided the farm into five fields, and sought improvement by marsh mud and putrescent manures. This farm now produces good crops of wheat and corn—though not so abundant as under the first impulse of clover and plaster. Whether gypsum be a stimulant, or an alterative, I do not know; but I am satisfied it may be pushed too far—and like shell marl, does mischief by an injudicious application. I commenced marling this farm last fall, and intend, with caution, to try gypsum upon my marled grounds.

For the last four weeks the winter has been rigorous. Crops of wheat have afforded but a small supply of straw, and till the grass springs, the cattle must suffer. Duty and interest inculcate that every creature over which we exercise dominion ought to be supplied with food suited to their wants. My cattle generally get on tolerably well, till the warm days in February, with corn cops and wheat straw; they then seem to

loathe this food. Salt provision is said to be the best diet for a laboring man—but if he is constantly kept on it, without a plentiful supply of bread, he will sicken and die. If our winters were as long as they are to the north, with an abundance of our provender, (corn-caps and wheat straw,) I doubt whether our cattle would get through them. The late William Cobbett recommended strongly, ruta baga for cattle; but his agricultural statements were so exaggerated, and all his notions so strange and unsettled, that I could give them no confidence. Last year, for the first time, I grew a small quantity; my milch cows eat it with avidity, and indicate, both by their milk and appearance, an improved condition. One acre well improved and cultivated, will produce from three to five hundred bushels, equal to ten tons. For the future, I shall endeavor to grow as much ruta baga as will serve for a change of food from the middle of February till my cattle find more palatable sustenance in my clover fields.

I greatly desire to see the tide of emigration to the west arrested. Large sources of improvement have been recently opened in our country, and more are still from day to day disclosed. Men of industry, with a moderate capital, might make a more eligible location here, than in the far west. It is true that richer lands can be purchased on the frontier at a cheaper rate—but when building, clearing, and inclosing come to be added, I do not doubt, that an old exhausted farm can be purchased, marled, and brought to a point of profitable product for less money. I offer as proof, a farm now held in Kent county by Captain Vickers of Baltimore. This gentleman having acquired an independent fortune by trade, with a laudable attachment for his native soil, purchased the farm on which his father had lived: the scene of his early sports and joys. It came into his hands exhausted and impoverished He has improved it in an expensive way by ashes and other manures from Baltimore, and I understand it affords him a clear profit of twelve per cent. on the whole cost—yielding from twenty-five to thirty bushels of wheat to the acre. We have thousands of acres on the Eastern Shore, which do not now repay more than the expenses of cultivation, which, with the resources of our own lands, might be brought to a point of profitable product. Our insulated situation invites few persons from abroad. We sometimes see a gentleman merchant, or his collecting agent, on the public road, which passes through the peninsula, from north to south, on our worst lands; and the bird's-eye view of our Professor Ducatel was not calculated to enlighten on this subject—I do not mean to disparage our Professor—I have no doubt he is a good chemist. He was in pursuit of marl, and prosecuted his search with diligence; but his anterior habits and pursuits did not greatly qualify him to judge of the capabilities of our country. A few years ago I travelled in the stage with the late senator Johnson of Louisania, and we conversed about agriculture. He made particular inquiries as to the product of our lands and the expense of cultivation. I told him that a well improved farm on the Eastern Shore would produce twenty bnshels of wheat and forty of Indian corn to the acre, and made a rough estimate of the expense of cultivation. He said the gross product of their cotton and sugar plantations were greater, but when the difference of expense of cultivation was estimated, and our facilities for market, that such a farm as I described, was as profitable as the lands in his country. I was much struck with the admission. I had seen a paper drawn up by him on the tariff, in which he attempted to reconcile Virginia and Maryland to the measure, by the value of our slaves in the southern market. The sale of our slaves in the south, stands as a reproach both to our morals and agriculture—and if time should arrive when Maryland (one of the good old thirteen) shall settle down as a slave breeder for the new state of Louisania, I shall be prepared for emigration.

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For the Farmers' Register.

GRASS ALONE INADEQUATE FOR IMPROVING LAND. IMPORTANCE OF MANURE.

Charlotte County,
12th March, 1836.

The attention of agriculturists, in this section, has not been sufficiently turned to the subject of raising manure, in order to the improvement of the soil. There has, perhaps, been sufficient attention bestowed, and confidence placed, at least by some planters, in artificial and other grasses—and many of us have lost time and money in searching for substitutes, when none were to be found—and relying on other sources for improvement, than the main dependence, which is the manure of stock and farm yard.

Manuring by stock, and that raised by collecting vegetable matter in our farm yards, are the only real sources of permanent improvement, to any great extent, within the reach of the planters of this district. In vain shall we calculate or hope for improvement, either in soil or purse, unless we turn our attention more particularly to this subject. Unless diligence, perseverance and strict economy are observed in this department, our hopes of improvement will prove vain and fallacious.

Grasses *ungrazed,* will serve to keep the soil together; but alone and unaided, they are extremely limited as a source of improvement, and should not be relied on. They are all-important assistants, but separately considered, they will not perceptibly improve our land. If they improve at all, it is so slow that I have not been able to discover it. I have a field which has been well set with clover for eighteen or twenty years, and there has been no perceptible increase in the production. I consider *grasses alone* insufficient, and not to be relied on as a source of improvement. Plaster in this region, costs too much to use it in large quantities, and we are destitute of marl. What, then, are the principal resources of the planter or farmer for improvement? We answer, unhesitatingly, putrescent manures. Without proper attention to this subject, all hope of improvement will prove visionary—we would, therefore, warn the inexperienced not to rely on grasses *alone*—not by any means to neglect the more important consideration of collecting and increasing the manure heap.

Many sources for raising manure, are entirely neglected by the planters of this vicinage. The considerable amount of manure, which, with a small degree of attention might be raised from

hogs, is commonly, wholly lost. The hog-feeder generally selects a clean smooth path to feed his hogs without the inclosure—where the first rain will probably carry the offal, *deposits* and all, into the next stream—and thus the whole is lost.

It is true, that as much manure may be raised from a common stock of hogs, as there commonly is from a like stock of cattle. I have, for several years, fed my hogs on the field intended for corn, in summer—and in winter, confined them every night in well littered pens—feeding principally at night, in order to induce them to come up regularly. The corn is thrown among the litter in the pen, by which the cobs are saved, and as an inducement to keep the hogs as long as possible on the litter. There are many other sources for raising manure, neglected by farmers in this region. This is selected, because it can be seen at a glance. Raising manure is of primary importance, and should be paramount to every other consideration. Collecting litter for the farm yard should not be considered a slight affair, and made a matter of convenience—it should be viewed as a matter of great importance, and all other work should be made to yield and give place, until the pens are well supplied. Unless this *rule* is established and pursued, we must frequently fail in raising a good supply of manure, and fall proportionably short in improvement.

One thing is evident, our richest lands are benefited by the application of manure, and may be improved to almost any extent. There is scarcely a limit to the increase of crop and improvement of soil, not attainable by a proper application of putrescent manures. Here is a wide field, and one in which we shall not be apt to err, by spending too much time or labor. Both lime and gypsum fail on some peculiar soils; but putrescent manure, the plaster of the farm yard, is a never-failing panacea—it always increases the crop and improves the soil, when properly applied. One of your late correspondents speaks of covering the soil to protect it from the cold, &c. &c. I think it a good idea—an excellent one indeed, if he had only added, that the covering must be of good stable manure. This is what the land of your correspondent, and all others in this region, especially needs. Whether they are light or stiff, sandy or loamy—whether the substr itum be red, white or any other color, they are all benefited by a good covering of *stable manure.*

Hogs hair is the best manure I ever tried for tobacco plants. I have never seen it applied without considerable effect. It should be beaten with small sticks until the masses are separated, and then sprinkled regularly over the patch after it is sown. I have not used it long enough to decide what quantity is best to be applied. It should be scattered regularly, and so that none of the patch is without. There is no danger of having it too thick, provided it be beaten fine.

I have experienced considerable benefit from the use of the coulter, in preparation for corn, on the bedding plan. The rows are laid off, two furrows to the row, with a coulter as large as a common trowel hoe—and then the bed is raised, the coulter furrow being in the centre. The advantage of the use of the coulter, will be very apparent in the droughts of summer, when the blades of the corn would otherwise be liable to burn.

J. F. E.

IMPROVEMENTS OF MONMOUTH, N. J.

To the Editor of the Farmers' Register.

I take this opportunity of sending you an extract taken from the 1st No. (5th inst.) of the 50th volume of Niles' (Baltimore) Weekly Register.—Should you think it worthy of a place in your Farmers' Register, you are at liberty to insert it. As a work of general reference, Niles' Register is superior to any I have ever read. The editor has ever been the zealous and devoted friend to domestic industry and internal improvements. He has lived to see them both prosper and flourish in his own country.

P. W. HARPER.

Greenfield, Nottoway County.

"For fifty years after the revolution, this county existed in a state of supine torpor. Not five lots were sold, in all this time, in the principal town of Freehold. A few years since, was made the great discovery of marl, which has been a mine of wealth to the farmers, producing the richest pastures and grazing for cattle and sheep, and for making butter and cheese. The consequence has been, that farms which have within 10 years sold at $10 the acre, now bring, readily, from $50 to $100. So much for the virtue of marl. Such is the wealth and enterprise thus brought into the country, that it is now proposed to make a rail road from the principal town, to join the Camden and Amboy rail road at Hightstown, distant 10 or 12 miles, with a spur or branch to the marl pits."

From Niles' Weekly Register.

IMPORTATION OF GRAIN.

It is a singular fact, that two or three cargoes of wheat, rye and oats, have recently been imported from Europe into New York, and have paid a handsome profit to those concerned in the transactions.

From the Washington Mirror.

TRAVELLING STOVES.

Dr. McWilliams of this city (Washington) has taken out a patent for a stove for heating carriages of all kinds, which is one of the most valuable inventions which has ever been made. It is remarkably simple in its structure, and may be sold for six or eight dollars, and it consumes the most inconsiderable quantity of coal. The advantages of such a stove are almost too obvious to be mentioned. Taking up very little room, they may be fitted to the bottom of gigs, chaises, and of every variety of carriage, and are particularly well adapted to rail road cars. The expense of fuel is not above three cents for a hundred miles, travelling at an ordinary rate. It is only necessary to make this invention known to secure its introduction very generally. For a trifling expense, a stage driver may now be as comfortably situated on his box, as by the warm fire; and the pleasure of sleigh-riding may be enhanced a hundred fold. This stove is now used in the cars of Baltimore and Washington rail roads, and gives entire satisfaction. The passengers are kept warm during the whole journey, and are never annoyed by the smoke, the stove being air-tight.

CULTIVATION OF CORN. MANURING, AND WESTERN EMIGRATION.

To the Editor of the Farmers' Register.

Fairfield, S. C.
12th March, 1836.

Having seen in your Register a great many communications on the different modes of cultivating Indian corn, I shall endeavor, by showing my method, and the success with which it was attended, together with some experiments I made, to add something to the very great fund of agricultural knowledge, already disseminated through a vast portion of our country, by your valuable paper.

I commenced planting my corn, last year, on the 17th of March. I planted in drills four feet apart, and two feet between each stalk in the drill. I consequently had as many stalks as if I had planted in hills four feet each way, with two stalks to the hill, which is the common method in this neighborhood. My land was well broken up, and in fine order, when the corn was planted. When it was about four inches high, I ran the shovel plough as near it as I could, without doing much injury to the roots. The plough covered up the young grass around and between the stalks, and left the ground, for ten or twelve inches on each side of the corn, in a fine loose state. In about a week afterwards, I had the corn hoed, and some earth put to it—a little more than was taken from it by the hoeing. When the corn was about a foot high, I had it thinned to one stalk. The mould board of the turning plough was then run to the corn, but as shallow as possible, to prevent it from cutting the roots. The middles were broken up with the shovel plough, which left the ground level, except a small ridge made by the turning plough. I ploughed it again the 1st of June, which I could certainly have dispensed with, had not the ground been grassy, and I wished to get rid of the grass—and I believe the ploughing I then gave it, did more injury than good. The hoes followed the ploughs, and chopped down all the grass and weeds that were between the stalks. The field produced an average of thirty-five bushels to the acre, while some fields adjoining mine, and planted in hills, produced only twenty, giving in favor of drilled corn, fifteen bushels per acre, and very little or no difference in the quality of the field. But there is one fact which I do not recollect of having seen in your Registar, though I may have overlooked it, namely: that land which will produce one large stalk at two feet distance in the drill, may not be able to support two stalks standing together at four feet distance, which fact I have ascertained by experiment. I planted, last year, one acre of ground in corn, half of it in drills two feet by four, and the other half in hills four feet each way; the stalks in the part that was drilled, were large, and produced, generally, two good ears, while that which was planted in hills, seldom produced more than one; and that one, generally, small. And the reason why checked corn does not produce as much as drilled, (and on my plantation it does not,) is owing both to the greater quantity of nourishment necessary to support two stalks standing together, which nourishment poor land is not able to supply, and likewise to cutting the roots, which, beyond doubt in my mind, is an injury.

Our land is poor; but if a man speaks of manuring his land here, he is immediately pronounced to be "*non compos méntis.*" In fact, the improvement of our land by manuring, is a very serious undertaking, as our only dependence is stable manure and compost; and as cotton is the principal production of this section of country, the time necessarily devoted to raising the crop, and gathering it in, consumes so much of the year, that little time is left for any thing else. But, on the other hand, *one acre of land that is manured will produce nearly, or quite as much, as two that are not.* This is another *fact* I have ascertained by experiment.

"Westward, ho!" is here the rage; and we see daily, lands that, by proper management and manure, might be made to produce one hundred bushels of corn, or one thousand weight of cotton to the acre, worked to death, if I may use the expression, and then deserted, for the swamps of the Mississippi, or the prairies of Texas. The manner in which land is cultivated in this part of the country is a wanton destruction of the means of happiness which Divine Providence has placed at our disposal, and calls loudly for a remedy which can only be obtained from agricultural societies and agricultural papers.

JAMES C. WHYTE.

For the Farmers' Register.

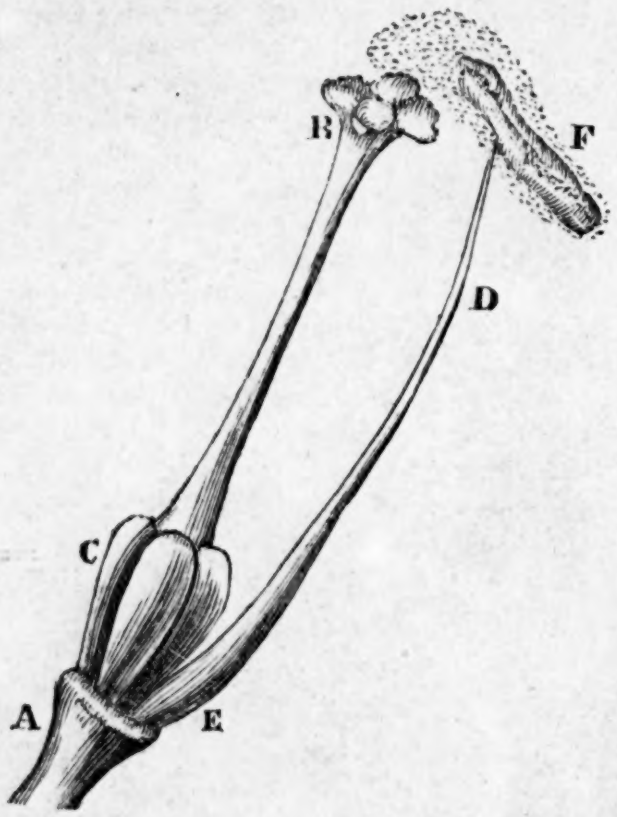
VEGETABLE AND ANIMAL ANALOGY.

On the generation of plants.

[Continued from page 229, Vol. III.]

Before I enter upon the subject of the generation of plants, I will observe, that the roots may, with propriety, be called supporters and feeders. They receive from the earth, and convey through the plant, principles which go to their developement and support, creeping in various directions in search of food. The fluid principles are, in all probability, carried forward by capillary attraction, and conveyed by proper vessels into the trunk, branches, leaves, flowers and fruit. Here they undergo a change, a process called secretion; and by a proper union of fluids, are formed, bark, wood, foliage, &c. The germ of plants is a sexual offspring, and I have reason to believe, is perfect in miniature, requiring nothing but the application of air, heat, light and food, in order to bring about its full developement. Vegetable life, then, is the effect of various *stimuli*, acting upon organs of motion, and is kept up and supported by a due destribution of fluids which circulate in the vessels of plants similar to the blood in the arteries and veins of animals. The roots of plants are of a spongy nature, having tubes running, more or less, parallel with each other, and after reaching the trunk, divide and subdivide into an infinite number of branches, until they pervade every part. These vessels readily admit principles from the earth and atmosphere, which, when combined and properly assimilated, form water, sap, oils, mucilage, &c. Moses tells us in his account of the creation, that plants have their seeds in themselves; that is, every plant contains in itself, male and female powers. The text he has given us, seems to be explained by this discovery, and may lead us to consider that plants wanting local motion, re-

quire this union of the sexes in themselves, by which means they may generate without their being in the neighborhood of other plants; they are in this respect, hermaphrodites, having their propagation without the help of one of the same species. The lilly being a flower more generally known than any other, and its generative parts large and exposed, I shall, from thence, endeavor to explain the method which nature makes use of to impregnate the seeds of that and every other plant, and by which means the several species of vegetables have been continued to the world.



The flower of the lilly has six leaves or petals, which are set on upon the summit of the foot stalks marked A in the figure—they serve to guard the parts of generation from the injuries of the weather; and as they are of no other use, it is unnecessary to place them in the figure. B is the mouth of this *pistillum*, or passage, which leads into the uterus C, in which are three ovaries filled with little eggs, or rudiments of seeds, such as we find in the *ovaria* of animals; but these eggs will decay and come to nothing, unless they are impregnated by the *farina fecundans*, or male seed of the same plant. From D to E is a stamen of the lilly through which the male seed of the plant is conveyed to be perfected in the *apex* F, where, by the Sun's heat, it ripens and bursts forth in very minute particles like dust; some particles of this powder falling upon the orifice B, is either conveyed from thence into the uterus C, or by its magnetic virtue, draws the nourishment with great force from the other parts of the plant into the embryos of the fruit, and makes them swell. In this figure, I have only given a design of one stamen with its *apex*, to prevent mistakes in my explanation; but the flower of every lilly has six of the same figure and use, which are placed round about the *pistillum*, or female parts, so that it is almost impossible it should escape from receiving some of the male dust, (or *farina fecundans*,) falling upon it. In this, and other flowers of a like nature, the *pistillum* is always so placed, that the *apices* which surround it are either equal in height with it, or above it, so that their dust falls naturally upon it. And when we observe it to be longer than the *apices*, we may then conjecture that the fruit has begun to form itself, and has no longer occasion for the male dust. And it is likewise observable, that as soon as this work of generation is performed, the male parts, together with the leaves or covering, fall off, and the pipe leading to the *uterus* begins to shrink. We may further remark, that the top of the *pistillum* in every flower is either covered with a sort of velvet *tunic*, or emits a gummy liquor the better to catch the dust of the *apices*.

And now, as we may find in the description of the lilly, that the *uterus* is within the flower, so, on the other hand, the *uterus* of the rose is without the flower at the bottom of the petals or flower leaves. And, likewise, in fruit trees—the cherry, plum, and some others, have their *uterus* or *utricles* within their flowers; and the gooseberry, currant, apples and pears, on the outside or bottom of their flowers. But, further, although nature has designed the dust of the *apices* to fecundate the female parts contained in the flowers or plants; yet, we observe in some plants, the male and female parts are remote from each other; as for example, the gourd, pumpkin, melon, cucumber, and all of that race, have blossoms distinctly male and female, upon the same plant. The male blossoms may be distinguished from the others, as they have not any *pistil* or rudiment of fruit about them, but have only a large *thrum* covered with dust in their middle; the female blossom of these has a *pistillum* within the petals, or flower leaves, and the rudiment of their fruit always apparent at the bottom of the flower before it opens; and so, in like manner, all nut-bearing, and I think, mast-bearing trees, have their *catkins*, or male blossoms, remote from the female parts. The oak, for example, which blossoms in May, has its male parts distinct from the acorns. We find strings of little *farinaceous* flowers in great abundance, remote from the rudiments of the acorns or fruit, and so likewise in the walnut, chesnut, hazel, pine, cypress, and even the mulberry, aspen, and others. I have observed that some sorts of willows change their sex every year, by producing only male blossoms or *catkins* one year, and the other following, strings of female blossoms, which, if they then happen to be near enough some flowering male, will produce seeds not much unlike those of an *apocinum*. When we view with a good microscope the male dust of one single plant, we find every particle of it to be of the same size and figure; but in some cases, it is of two colors, as in the tulip, where it is yellow and blue; but as plants differ from one another in their figures and qualities, so are the figures of their several dusts greatly different from each other; a grain of the dust of the *geranium sanguineum, maximo flore*, is like a bead of necklace with a hole through it, and in like manner does the *farina* of every plant differ in its shape from the rest.

The female parts of generation in plants are best seen in large fruits, without the trouble of the microscope; such as the fruit of the pumpkin or melon, where, with the natural eye we may discover the vessels distinctly which make the tunic or covering of each ovary—we may see how the seeds are joined to it, and by what end they receive their nourishment. And again, between the several ovaries enclosed in that fruit, we may very easily perceive the *vagina*, or passage, through

which the *farina fecundans* has passed to impregnate the seed.

It may, perhaps, be objected against this hypothesis, that there are many flowers which hang downwards, as the *crown imperial*, the *cyclamen*, &c., and that their *pistils* cannot receive the *farina fecundans* upon them; but if we observe that the *pistils* of these flowers are always more prominent, or somewhat longer than the dusty *apices* which surrounded them, we may easily conceive that the *glutinous* matter and velvet covering on the extremities of the pistils, may be capable enough of receiving and holding some of the powder as it falls; and whether the intromission of the *farina fecundans* be requisite or not, its lodgement on the mouth of the *pistillum* may, by virtue of its attractive quality, perhaps fecundate the seeds contained in the *uterus*.

I am sure, in the production of animals, there are yet greater difficulties to encounter; and it may be, if the analogy between plants and animals was more inquired into by the learned, they might discover many things which would be serviceable to the preservation and benefit of animal bodies, as this knowledge will be to the improvement of the vegetable world. We find, for example, that trees are generally longer lived than animals, some of them living to four or five hundred years; nay, we have some accounts, by tradition, of trees that have lived above two thousand years. The reason, I think, is plain: first, trees have little or no sensation, and it is my opinion, that the senses prey abundantly upon the juices of the body they belong to. Secondly, they always breathe the same air; and thirdly, they feed always upon the same diet. And mankind, who in former times is said to have lived upwards of nine hundred years, subsisted upon simple food, and drank of the clear stream; at least, he had then but little variety of food.

I shall now proceed to what I call the demonstrative part of this system. I made my experiment upon the tulip, which I chose rather than any other plant, because it seldom fails to produce seed. I carefully took out of them all their *apices* before the *farina fecundans* was ripe, or had any ways appeared. These tulips being thus castrated, bore no seed, while, on the other hand, those which I had let alone were fruitful. But for a farther demonstration that plants generate, after the manner I have endeavored to describe, I shall recommend to my reader the following experiment: Make choice of such a plant, of the hazel or filbert, as you find to be in a bearing state, and far distant from any other of the same sort; this tree, in January, puts forth what are commonly called *catkins*, which are long *thrums*, composed of very small flowers, that, towards the beginning of March, are covered with a fine dust, or male seed. It is true that the blossoms, or female parts, appear on the buds of the same tree—they are very small, and hardly to be discovered without strict examination, only offering to the view a small cluster of scarlet threads, which are so many tubes leading to the rudiments of the nuts; this happens at the windy season of the year, that the male dust may be more easily conveyed to the *utricles* or female blossoms of the plant. Now, as soon as the catkins appear, they must be carefully taken from the tree, and it will produce no fruit that year, unless you have a mind to single out any particular blossom of it, which may be impregnated with catkins from another tree, gathered fresh every morning for three or four days successively, and dusted lightly over it, without bruising its tender fibres; and in like manner, may the blossoms of any other tree or flower be castrated, and will have the same effect.

By this knowledge, we may change the property and taste of any fruit, by impregnating the one with the *farina* of another of the same class, as, for example, a codling apple with a pearmain, which will occasion the codling, so impregnated, to last a longer time than usual, and be of a sharper taste; or if the winter fruits should be fecundated with the dust of the summer kinds, they will decay before their usual time; and it is from this accidental coupling of the *farina* of one with the other, that in an orchard where there is variety of apples, even the fruits gathered from the same tree, differ in their flavor and times of ripening; and, moreover, the seeds of those apples so generated, being changed by that means from their natural qualities, will produce different kinds of fruits, if they are sown.

It is from this accidental coupling that proceeds the numberless varieties of fruits and flowers which are raised every day from seed. The yellow and black *auriculas*, coupling with one another, produced seed which gave other varieties, which again mixing their qualities in like manner, has offered us, by little and little, the numberless variations which we see at this day in flower gardens. *Auriculas*, whose flowers were of one color, and stood remote from others, have produced no variety.

I need not explain how the male dust of plants may be conveyed by the air from one to another, by which this generation and production of new plants is brought about; but I shall hint, by the by, to such as plant orchards for cider, that they ought to plant only one sort of apple in those orchards, and that such plantations should be likewise remote from other kinds of apples, whose *farina* would else certainly spoil the cider fruit by ripening, some sooner, and others later, which would occasion almost a continued firmentation in the liquor, and never permit it to settle or grow fine.

Moreover, a curious person, may, by this knowledge, produce such rare kinds of plants, as have not yet been heard of, by making choice of two plants for this purpose, as are nearly alike in their parts, but chiefly in their flowers or seed vessels. For example, the Carnation and Sweet William are in some respects alike, the *farina* of the one will impregnate the other, and the seed so enlivened, will produce a plant differing from either. These couplings are not unlike that of the mare with the ass, which produces a mule; and in regard to generation, are also the same with mules, not being able to multiply their species, no more than other monsters generated in the same manner.

We may learn from hence, that the fruit of any tree may be adulterated as well by the *farina* of one of the same sort, which perhaps may be sickly, and of a dwarf kind, as by the dust of some other kind nearly related to it, and worse than itself. Now, as such couplings may be very frequent in the forest, I would recommend the choice of seed, to be made only from such plants or tim-

ber-trees as excel in greatness, or other good qualities, and are far distant from others of meaner sorts, which might degenerate their seeds and cross our expectations when they come to grow up, and this is as necessary to be observed among vegetables, to maintain their good qualities in the young plants they are to produce, as it is in the breeding of game cocks, spaniels, or running horses.

There is but one kind of plant that I know of, which seems to be out of this danger of coupling with other sorts, and consequently of either improving or diminishing the qualities of its seeds, and that is the misletoe. The parts of its flowers are indeed as fit for generation as those of other plants; but I have never seen any variety of this plant, nor do I know any other nearly enough related to it to engender with it; for whether we find it growing upon the oak, willow, or any other tree whatever, the leaves, flowers and fruit, with its manner of growth, are all alike. And since I have had occasion to mention it in this place, give me leave to take notice of some particularities belonging to it, as it is neither to be propagated in earth or water, but upon trees and plants only. The ancients made it a superplant, peculiar to the oak, and tell us that although it seemingly produced seed, they did not believe that that seed could possibly be made to vegetate, because I suppose they had tried it in the earth without success. But as it is so frequently found growing on other trees besides the oak, I shall take occasion at once to overturn their opinion in relation to this plant, by showing how it may be propagated from seed upon any tree whatever. About Christmas, when the berries are ripe, they may easily be made to stick upon the smooth bark of any tree you have a mind to propagate them upon, whether it be the oak, ash, elm, apple, pear, plum, rose, gooseberry, or currant, &c. The viscous juice which surrounds each seed, will bind it fast to the part you place it upon; and with this small trouble, you may expect young plants the following year, provided the birds do not devour the seeds you have sown; therefore it would do well to secure them. I have seen twenty plants of misletoe, growing upon as many different sorts of trees and shrubs, in one garden, which were propagated in the same manner I have mentioned. And I believe it would be very useful in correcting the too great vigour of some fruit trees; and to bring them to bear, by taking from them the superabundant juices, which are always destructive to prolificity either in plants or animals.

And now, from the account I have given of the generation of plants, we may learn why double flowers seldom bear seed, because the dust of the apices is too much crowded with the petals or the flower leaves which, for that reason, cannot easily reach the style or pistil of the flower which is always prominent, and above the petals in full flowers. It appears, likewise, that the natural properties of fruits or seeds may be changed by accidentally coupling with other plants, and that the seeds so altered, may rob us of our expectations in planting, by having their principles debauched by the dust of distempered and degenerated plants.

Thus I have endeavored to explain what I proposed, viz: that plants have a mode of generation somewhat analogous to that of animals.

GALEN.

EFFECTS OF THE REMARKABLE PREVALENCE OF COLD, IN SOUTH CAROLINA. REMARKS ON EMIGRATION TO THE WEST.

To the Editor of the Farmers' Register.

Abbeville, S. C. March 11th, 1836.

There appears to be an unaccountable change in the seasons. Gibbon in his history of the decline and fall of the Roman empire, remarks, that while Germany was one almost continuous forest, the Danube was often frozen over, so that armies could pass on the ice in safety; but that in modern times, after the forests had fallen before the labors of civilization, and the marshes have been drained the climate has been so much ameliorated, that such a circumstance in relation to this river has not occurred. But the opening of our country by the removal of the trees, and the exposure of the ground to the fair action of the sun does not seem to have produced this effect here. The early and severe frost of last autumn did material injury to the cotton crops. The preceding spring had been unfavorable to a good stand, which rendered it necessary to replant in many instances. This circumstance made it late before the cotton plant started in its growth. The early frost found it very succulent, and many of the bolls by no means matured. The severe frost which occurred the 5th, 7th, and 8th of October, completely killed the plant, and destroyed the immature bolls. A light frost at that time, that would have merely checked the growth, would not have done much harm. As winter was thus early in assuming its sceptre, it seems unwilling to surrender its dominion to the genial influence of spring. While I now write, the weather is quite cold. There is a good deal of ice, which does not thaw in the shade at 12 o'clock, M. The forest and fruit trees have not yet budded. It has not been unusual in this country for planters to have much of their Indian corn planted by this time. But so wet and cold has been the season, that no one has ventured to commit the seed to the ground. Indeed, they have not altogether finished sowing their oats. Nevertheless, I do not regard the present inauspiciousness of the season as foreboding an unpropitious cropping one; for, when winter is finally broken up, and a vernal sun exerts its fructifying influence upon vegetation, every thing will grow off without a check. It is not safe to plant cotton before the 10th of April, anterior to which time planters generally have their corn in the ground. Our cold weather commenced about the 1st of February, and has continued, with short intervals, until now. We have had no snow this winter in this portion of the state, but we have had two severe sleets, and many cold rains. Last winter was a snowy one with us—the last and deepest fell the 5th of March.

The tide of emigration from this state has been great to the more inviting virgin soil of the southwest. But this flow of population is not confined to South Carolina. Virginia, North Carolina, and Georgia have also beheld, with melancholy emotions, their useful citizens abandoning the country of their birth, and the tombs of their ancestors, to find a home in that enchanting region. This is a deplorable state of things, and ought to invoke the wisdom and concentrate the energies of these states to stop this current which is annually

sweeping away so many thousands of their people—and I am glad to see, as an efficient mean to this end, the efforts now making by rail roads, canals, &c. to afford every facility to commercial, social, and political intercourse. Besides these means, however, there must be brought to bear great individual exertion and enterprise. Exhausted lands must be restored—fertile soils maintained in good heart—industry exercised—economy of time and labor consulted and practised. These things would soon put a smiling face upon our country, and take away the inducements to emigrate. I think the prospect already grows brighter, and a reaction is taking place. The fertile cotton regions of the southwest are already nearly filled up. Good land there is high, while land of similar quality here is comparatively low.

The glowing descriptions given of these new countries have acted like a spell—and men have imagined that they have at last discovered the t rue El Dorado. But the actual view dispels the illusion. Although the soil is more favorable to cotton, and greater crops can be raised than on that from which the emigrant went, yet this circumstance alone will not counterpoise the many disadvantages and deprivations to which he is subject; hence arise discontent and disappointment; and in some instances, men have summoned up sufficient resolution to return to the homes of their fathers, and spend the remainder of their days where they first drew their infant breath. I hope, sir, that your Register will continue to stimulate the people to redoubled efforts in the cause of agriculture, and that our belowed country will again wear the smile of renovated nature, so that there shall no longer be a necessity to leave it, to seek a better. This is a consummation devoutly to be wished.

PATRICK NOBLE.

For the Farmers' Register.

ON HORIZONTAL PLANTATION ROADS.

In bringing to light the causes which have contributed to gulley and waste our lands, there is one in particular, which it appears to me has been entirely overlooked by our modern Jeremiahs, in their bitter lamentations over the desolations of our agricultural Zion, but which ought not to be, by any of her friends who are at this time endeavoring so zealously to build up her waste places, and to establish well her bulwarks: but which it is to be feared will suffer a Babylonish captivity at last, (if our prayers are not heard and answered,) notwithstanding all the lamentations of Jeremiah, or the visions of Ezekiel. This cause, though apparently trivial, is the mischief done by our present plantation roads and paths. The deepest and most appalling cavities, which every where strike the feelings of the farmer with horror, in our wasted and abandoned fields, had their humble origin in small cart ruts! These cart roads, like the ploughing of our ancestors, (which if we do not alter, will be as much censured in after times as we now censure them for perpendicular ploughing) are run right up and down hill: and as soon as one place becomes a little cut up and miry, another is made by the side of it until at least a dozen roads are formed by the side of each other, on the same hillside. It is astonishing how soon a deep gulley is formed by the water, running in these ruts, (so great is the fall,) even during one hasty shower; and unless there be some remedy provided, must continue to waste and mar the faces of our farms—already scratched and gouged in a long contest with Cuffee and his deadly weapons.

To increase and multiply, and replenish and subdue the earth, is a moral injunction; but the latter clause has been practically interpreted in a different signification from what was intended: and the *soil* indeed has been *literally* subdued. A rightful war was waged, since the creation, against the thorns and thistles and other pests—and it was intended that man should "subdue" and suppress the more noxious parts of the vegetable and animal kingdoms, (and some say, uncivilized nations,) and give encouragement, by culture and preservation, to the growth and propagation of those which contributed to the comfort and sustenance of man. The injunction has been misinterpreted, and a long and successful war has been carried on against the soil itself. But while some have been engaged in this ruinous conflict, others, as bad, have laid down the weapons of their rebellion, and have made peace with the earth forever. But to turn away from this scene, which has been the cause of so many feeling digressions in your journal, I have witnessed tremendous gulleys formed also by foot-paths: and how many of these are made in a plantation by people, hogs, sheep, cows, &c., and these in proportion to the poverty of the land and the scantiness of the vegetation. In such fields, (and many there be,) the barren hills serve only as bridges to convey the poor creatures from one distant green spot to another, or to some solitary fruit tree: their velocity and the friction of their feet towards which, are always in proportion to the propelling power, hunger, and their leanness in the same ratio. Indeed, there are so many negroes, cows, sheep, hogs and horses, kept on some plantations, that it appears to me they must tread it entirely over in a few days —so that the whole land becomes one solid beaten track, some idea may be formed of the number of the paths they make, during a snow, though they travel a great deal less at such times. The way these gulleys are made by paths, is, the soil is trodden entirely naked of vegetation, by the shoe and hoof, and nothing to hold the earth together, away it goes the first hard rain. Independent of these gulleys, made by frequented paths, thousands of little gutters are formed all over the fields, by treading off the vegetation, (for which the hoof is admirably constructed,) so that the soil steals almost insensibly away without making any very prominent gulley. This part of the destruction of cattle on land seems never to have been duly considered; but attention turned simply to the depriving the soil of its vegetation and treading the land so hard, as to prevent its reproduction. To prevent the evil of paths, I do not propose to instruct the hogs and cows to walk horizontally around the hills—but these may be kept up on the confinement system, which is infinitely preferable to what I would term the "common" system, which is indeed "having all things in "common." As to the cart roads, let the same direction be given to the wheel, as we have given to the point of the plough, and let the farmer as soon

think of ploughing up and down hill, as carting up and down hill. Let the roads be graduated on the side of the hills nearly as the ploughing. Some of the advantages of such roads are briefly these: The object of a plantation road is not so much to lead to one particular point, (like a road to market,) but to have every point of the road as contiguous and convenient to every part of the plantation as possible; for we haul produce from every part of a farm. The land is prevented from *washing* entirely, which is of itself a sufficient consideration. The *draught* in hauling is greatly diminished, and made more uniform—consequently, fewer teams would answer—horses and oxen would be much relieved of their *burthens*, (and of course, would *last* longer—) keep in better *order*—*eat* less, and lose no *time* in balking—*carriage*, which constitutes a large portion of the labor of a farm, would be much *accelerated*, (and of course more of it would be done *per diem*—) *larger loads* might be hauled—*locking* the wheels, *scotching*, and *drag-carts*, would be superseded, and no danger of throwing the weight of the load on the necks of the oxen apprehended, and many other advantages which would be the consequence. The only objection which could be shadowed against such roads, is, increasing the distance in some instances. But this is more apparent, than real; for the distance is not so much increased, by running around a hill instead of over the top of it, as would at first appear. Suppose, for instance, the the road is to reach a point over a range of contiguous conical hills, if a load could be conveyed over the summits of the hills, in a straight line by bridges, the distance would indeed be much less than around the bases; but we have to follow the acclivities and declivities of the hills, which would be double the distance across the summits, and a great deal further than that of a graduated road around the bases of the cones. Again, if we suppose the range of the hills to be hemispherical, the distance over the tops would be precisely the same as a horizontal road around the bases, and the draught infinitely less. In hills of any other construction, where the distance around might be greater, the diminution of the draught would over-balance the distance in favor of horizontal roads, in preference to vertical ones. The more broken the plantation and higher the hills, the more advantageous would be such roads in facilitating carriage. Witness the ease and elegance with which conical mountains are surmounted, by those beautiful spiral, graduated roads. These roads might be made perfectly level transversely, by digging down the hill a little, and nearly level, longitudinally, by the rafter level—and the bank would answer for a conductor. Our horses then might trot (paradoxically) on level ground up hill.

The idea of horizontal roads is not chimerical, they are perfectly practicable; and next in importance, in the preservation of our soil, to horizontal ploughing. I have constructed one over the hilliest part of my plantation—and prefer it, as a rural walk or ride, to any other. The ease and velocity of the laborers getting from one part of a farm to another, is no small consideration. Hence, a farmer can make more, where his crop is in a body. Locomotion is a chief part of farm labor—(in which it differs from other pursuits—) and trudging from place to place, consumes much time. I have been long convinced of the benefit of what are called tram rail roads, between those parts of a farm where a constant communication is kept up. I found one very useful, during the deep snow, from my wood-pile to the house last winter. But lest I should be thought to be becoming too chimerical, by that part of the community who have been so extremely sober, as to do nothing, I stop for the present.

N. E. READ.

From the Genesee Farmer.

THE EXTINCT ANIMALS OF THE ANCIENT WORLD.

It may be well known to most of our readers that the remains of many animals, unlike any that now exist, are found in earth, but more especially in rocks, their bones and shells constituting a part of the stony strata of the globe. A similar remark will apply to a great number of extinct plants. It is not our design to attempt an explanation of the causes which have produced such extraordinary results, though it is due to truth and sound philosophy to say in passing, that the late discoveries in geology amply confirm the Mosaic account of the creation.

We well remember our surprise and pleasure when we first found those "medals of nature" in a rock belonging to one of the ranges of the Alleghany Mountains; but we can offer no observations of our own that would prove as interesting as the following extract from Dr. Hildreth's description of the coal strata of the Kanhawa Salines:

"The whole of this slate and shale is filled with the impression of *extinct* species of plants. Every layer of not more than an eighth or the fourth of an inch in thickness when separated, displays fresh impressions of a variety of species, delineated on the face of the slate with the most exquisite beauty and perfection. The minute markings of the ribs and nervures are faithfully preserved. The vegetable matter is replaced by a thin coating of coal, and when this is removed, the perfect impression is left on the slate. The peeling up or separating of the folia of the shale, seemed to me like opening the leaves of a sealed book, here deposited by the Creator from the earliest ages; containing a faithful and true record of the history of vegetation in its primitive days. Before me was collected a vast library of natural history, containing the stereotype copies of an almost endless variety of trees and plants, whose families and species, as we have every reason to believe, lived and died before the creation of man."

We believe it is no longer doubted that coal is of vegetable origin. In many places among carboniferous strata, are found the remains of large trees,—some standing in their natural position with their roots embedded in what was once soil, though now covered up at great depths in solid rock,—while others lie prostrate, evincing that they were torn up by the roots,and then deposited like drift wood. All these, with hundreds of herbaceous species of the same period, are now extinct. It also appears from the nature of both the plants and animals which inhabited the earth in that "day" that the temperature of the tropics, extended within the polar circles.

Professor Agassiz of Switzerland is engaged

in publishing a great work on Fossil Fishes, which is to be embellished with two hundred and fifty plates in folio. He has already examined more than ten thousand specimens; and one year ago, had ascertained eight hundred extinct species. No doubt many others will be found; and our own country may yet furnish its quota. We remember taking the impression of a fish about four inches in length from the slate* rock of this district, a few years ago; but it soon crumbled into pieces. Harder beds of the same rock, however, frequently occur. From the chalk near Lewes in England, some specimens of great beauty have been taken, and one with its "mouth open and entire. The air bladder appears unbroken in many of the specimens, and proves that the bodies were completely incased in the chalk before the putrefactive process had commenced. In some of these fishes, the fins, gills, and teeth, are preserved, as well as the air-bladder and tongue; the scales are also very distinct.

Of those who have been concerned in such researches, no one has been more distinguished for skill and success than Gideon Mantell of Sussex in England. The fossils we have last noticed were collected and preserved in his museum. To him the scientific world is also indebted for the discovery of the *Iguanodon*, a reptile which Cuvier considered more extraordinary than all those previously known. "I measured the circumference of the condyle or joint of a thigh bone in the museum," says Bakewell, "and found it to be thirty-five inches! and the thigh bone of a larger [specimen] at a distance from the condyle measured tweny-five inches in circumference." "Imagine an animal of the lizard tribe," says professor Silliman, three or four times as large as the largest crocodile, having jaws with teeth equal in size to the incisors of the rhinoceros, and *crested* with horns! Such a creature must have been the Iguanodon. "Marvellous as it may appear," says Mantell "we cannot but infer that some individuals attained *a height of nine or ten feet*, and were from *sixty to one hundred feet in length!* A circumstance even more extraordinary than its magnitude, is that of its having performed mastication like [an ox]; its teeth, which are of a very peculiar form, being in general worn down by the operation of grinding its food."

The "*day*" in which this animal lived has been called the Age of Reptiles. "There was a period," says Mantell, "when the earth was peopled by *oviparous quadrupeds of a most appalling magnitude*; and that reptiles were *the lords of creation*, before the existence of the human race." This agrees exactly with the 21st verse of the 1st chapter of Genesis, if we substitute *great reptiles* or "great whales," which the Hebrew text requires.* "It is impossible," says Cuvier, "not to acknowledge as a certain truth, the *number*, the *largeness*, and the *variety of the reptiles* which inhabited the seas or the land, at the epoch in which the strata of Jura were deposited."

We shall briefly mention a few of the most remarkable of these creatures, for which we are indebted, as well as for most of the preceding facts, to Silliman's Journal, appearing there mostly in the form of quotations however, from European works.

"The *Ichthyosaurus*, (fish-like lizard) of which *several species* have been discovered, had a large and long head, with jaws armed with teeth like the crocodile; enormous eyes; a short neck; a large and long body furnished with four broad and flat paddles, composed of numerous bones, and was evidently destined to live in the sea".

This description is from Mantell. One lately discovered in England "must have been at least *thirty-five feet in length*, and of considerable breadth.

The "*Plesiosaurus* (animal resembling a lizard) is yet more remarkable. The *head is very small*, and armed with numerous pointed teeth; the *neck of an enormous length*, and composed of between thirty and forty vertebræ, being *double* the number of that of any other animal, (the swan which has the greatest number of cervical vertibræ having but twenty-three); the body like that of the Ichthyosaurus, has four paddles; the tail is short. This extraordinary creatures appears to have been but little calculated to make rapid progress through the sea," continues Mantell, "and was still less fitted for progressive motion on the land. It is therefore probable that it swam on or near the surface of the water, *carrying his neck like a swan, and darting on its prey.*"

The *Pterodactylus* had the wings of a bat, and the structure of a reptile, with jaws furnished with sharp teeth, aud claws with long hooked nails. We have not seen any notice of its size.

"The *Mososaurus*, or fossil animal of Maestricht, attained the size of the crocodile, appears to have been aquatic like the latter, and to have moved its vast tail from side to side as an oar."

"The *Megalosaurus* (great lizard) must have been nearly *forty-five feet in length* and *seven or eight feet in height*. It was probable a terrestial animal."

These notices are principally intended however, to serve as an introduction to other wonders of the primeval ages. In the last number of Silliman's Journal, there is a long article on *the foot marks of birds on rocks* by Professor Hitchcock who is so advantageously known for his Geological Survey of Massachusetts. Eight different kinds of tracks have been examined, and engravings exhibit the shape of the feet. These discoveries were principally made last summer.

These foot-marks have been found in *five* places near the banks of the Connecticut river, along a line of thirty miles in extent. The rock in which they occur, is called by Prof. H. "new red sandstone," and it appears to be equivalent to the Saliferous Rocks which abound in the northern parts of this district. It is worthy of remark that none of these tracks have been found where its surface has been exposed for many years to the weather.

Prof. H. thinks it evident that those foot-marks were "made by an animal with *two* feet, and usually *three* toes. In a few instances a *fourth* or hind toe, has made an impression, not directly in the rear, but inclining somewhat inward; and in one instance, the *four* toes all point forward. Sometimes these ternate depressions run into one another, as the toes approach the point of convergence; but they also sometimes stop short of that point, as if the animal had not sunk deep enough

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* Pyritiferous slate of Eaton.

*Silliman's Journal, vol. xxv. p. 35—6.

to allow the heel to make an impression. Nay at that point the stone is in some cases irregularly raised, as if the weight of the animal had caused the sand or mud, to crowd upwards in the rear of the step. In a few instances also, behind this slight elevation, there is a depression as if a knobbed heel had sunk slightly into the yielding mass."

"The successive layers of the rock *are bent downwards*, under these impressions, often two, three, and even four inches in thickness. These tracks have been traced, and no less than ten have succeeded each other in such a direction, and with intervals so nearly equal, that it is impossible to doubt that they originated from the continuous steps of an animal. The alternate tracks deviate a little to the right, and the others to the left, the toes being ordinarily turned outwards. It is easy to determine whether they were made by the right or left foot of the animal."

Prof. H. is satisfied that these tracks were made on soft mud, (now rock,) at that time under water; and that the birds were of the tribe of waders, like the crane. He also concludes from decisive evidence, that the mud then lay horizontally, though in one place it now has a dip of 30°. The rock has consequently been sunk or elevated since that period.

Some idea may be formed of the size of these primeval birds by comparing their foot-marks with those made by birds of the present day, and this Prof. H. has carefully done. The foot of the pea-hen is three inches and a half long, and its step is nine inches; the foot of a large cock turkey is four inches long, and its step twelve inches; but the *Ornithichnites giganteus* had a foot sixteen or seventeen inches long, and its step was from four to six feet! while *O. ingens*, which is remarkably distinct from the former, left a track not less than two feet long with a step of six feet! The step of the African Ostrich was not known, but the length of its foot is only ten inches. Prof. H. therefore conjectures that the heads of these birds must have been elevated from twelve to fifteen feet above the ground!

In conclusion, we would add that these discoveries are entirely new, no impressions of the kind, in any other part of the globe, having been known to geologists. It has been remarked that there are fewer traces in the rocks of the existence of birds, than of any other class of animals; and this circumstance has been accounted for on the ground that they are less liable to be submerged, and of course less likely to be preserved in aqueous deposites. The rocks on which these birds left their tracks, are *older* than those in which reptiles occur in the greatest numbers.

Fairfax County,
March 1, 1836.

To the Editor of the Farmers' Register.

THE WINTER. OYSTER SHELL LIMING.

Winter, after five weeks of desperate and unflinching severity, was relaxed but for a few days, when, from the north and east, the rear guard was brought up in overwhelming array—and our cows and sheep, like the rats in some of your correspondents fields, are running about with tears in their eyes. If cattle keep a record, this will be marked as the expunging winter. * * * *

I pray your pardon for having travelled my hobby so far from my original purpose, which was to say, that I have purchased oyster shells and hauled them 7½ miles, and burnt and spread them over 60 acres of land, and this since I lofted my corn. If I can obtain shells by public advertisement, I will use from 10 to 20 thousand bushels during the year. I am too old to go to the land of milk and honey; and must, therefore, give my premises a new constitution, and stick to her until "death doth us part." I confess, sir, that I am not exactly pleased with my employment, but I see not how I am to do better.

Had your Agricultural Convention taken place in good weather, I should have attended; but I could only have recommended to the meeting one thing—to do their duty, and then communicate their doings through the Register to the public. In this way we may do much. Prosperity, I trust, awaits your laudable purposes.

X. Y. Z.

From the British Farmers' Magazine.

ON THE DESTRUCTION OF SEED CORN.

There is a probable destruction of every kind of corn, after it is sown, for which it is difficult to account. The quantity usually sown broadcast on the imperial acre in this country, is 3 bushels of wheat, 5 of barley, 6 of oats. It has been ascertained that 3 bushels of wheat, weighing 61½ lbs. per bushel, containing 2,685,912 grains; five bushels of barley, weighing 53¼ lbs. per bushel, 3,135,360 grains; six bushels of potato oats, weighing 43½ lbs. per bushel, 4,434,912 grains; and the same quantity of common oats, weighing 42 lbs. per bushel, 4,241,664 grains. The highest rate of produce in this country of these three kinds of corn is, in the Carse of Gowrie, which contains the finest quality of wheat land, about 52 bushels per imperial acre; in Forfarshire, which is, perhaps, the best county in Scotland for barley of uniformly fine quality, 60 bushels of barley per acre have been reaped; and in Strathmore, a fine district for oats, 72 bushels per acre of potato oats have been reaped.

Now, if every grain of seed sown germinated and produced a stem bearing the average number of grains in each ear, the produce would be as many times the seed sown as there was number of grains in the ear. On examining a prolific crop of corn, we shall find ears of wheat containing from 61 to 24 grains each, the average may be stated at 44 grains; the grains in an ear of barley range from 21 to 32, the average may be 28; and of potato oats the diversity is as great as from 182 to 20 grains in each head, the average being about 64. Computing what ought to be the produce by this supposition, in conjunction with the facts above stated, it should be, of wheat, 44 times the seed sown, or 132 bushels per acre; of barley, 28 times, or 140 bushels; and of potato oats, 64 times, or 384 bushels. But we have seen that the greatest actual produce in the richest districts of the country is, of wheat, 17 times, and of barley and oats, only 12 times, the seed sown, which fall very far short of what the produce should be, as

indicated by the number of grains in the ear.

There is moreover, a property connected with the growth of corn which affects the question of produce very materially. All corns produce more straws than one from one root. They do not so invariably; but the instances of a single straw from one root are rare in comparison with a number. Single straws are more rare in wheat and in barley than in oats. As many as five stems of wheat and barley may be seen from one root; two, three, and four, more frequently, and three most frequently. Many favorable circumstances must co-exist to determine the number of straws which will be developed from one root. Rich soil, either naturally so, or made so by manure and judicious culture, will produce more straws from the same number of roots than poor. A fine season has a similar effect, in this respect, to a rich soil. Early sowing will, in general, also produce a similar effect. For example, in regard to wheat, a rich and suitable soil will cause it to "tiller or stool,"—the technical terms in use to express a multiplication of straws from the same root; while a poor loose soil will scarcely be able to produce one straw from every seed that geminates. A fine season, particularly a fine spring, always causes wheat to tiller boldly; and early-sown wheat in autumn will tiller and cover the ground before the approach of winter. There is a variety of wheat cultivated in the borders of Scotland, which possesses the property of tillering in the autumn in a remarkable degree. It originally came from Danzig, and is called Danzig creeping-wheat.

Taking, therefore, in the case of a prolific crop, three straws of wheat and barley, and two of oats, as an average number from one root, and supposing, as we formerly did, that every seed sown produces a root, the produce of wheat ought to be 132, instead of 17 times; of barley 84, instead of 12 times; and of oats 128, instead of 12 times the seed sown. Or, to place the same result in another point of view: According to the number of grains contained in the quantity of corn sown on an acre, it appears that a square foot of land receives, of wheat 61, barley 72, potato-oats 97, and common oats 101 grains. By tillering, the 61 grains of wheat should produce 183 straws; the 72 of barley, 216 straws; and the 101 of oats, 202 straws, on a square foot of land; whereas the number of straws, with the tillering of the roots, does not really exceed one-third of those numbers on that space of ground. The inevitable conclusion is that only one-third of the seed-corn sown on the best land grows, the other two thirds are somehow destroyed. This conclusion is startl ng, and may appear incredible to those who pay little attention to these matters: the facts which prove it are accessible to all. But if this proportion of the seed-corn is destroyed in the best soils, a still greater destruction probably happens in the average quality of soil in the country.

The average produce of the average quality of soil is only seven times the quantity of the seed sown. The quantity of seed sown per acre has hitherto evidently been ascertained by practice alone. The seed has been sown up to the quantity which produced a full crop, and then that quantity had been fixed upon as requisite for the crop; but now we see that one-third of that quantity is sufficient for the crop. Ought we then to sow only the third? Prudence would decide in the negative, till it is ascertained how the loss of the two-thirds arises. That loss in the mean time is of great magnitude. The number of cultivated acres in Great Britain and Ireland amounts to 47,000,000; 30,000,000 of which are under the plough. Two-fifths of the latter, 12,000,000 acres are annually under the cereal crops. The average allowance of seed for the three kinds of corn may be stated at 4 two-thirds bushels per acre. The quantity of seed annually sown thus amounts to 7,000,000 quarters. If two thirds of this quantity are rendered unproductive by some agency which has hitherto been uncontrolled, then 4,666,666 quarters of corn are annually wasted! The quantity thus lamentably wasted would support more than 1,000,000 of human beings.

From the Edinburgh Weekly Chronicle.

FLOURISHING STATE OF AGRICULTURE.

Some writers have puzzled themselves in the endeavor to account for the cheapness of corn, but it is simply owing to abundance, and the abundance to the recent improvements in agriculture here and in Ireland. No species of production can be the object of long continued attention, without ways and means being discovered of increasing the supply, and diminishing the cost of production, and consequently the exchangeable value. And it would have been strange, if, while improvements were daily taken place in every department of arts and manufactures, agriculture alone had remained stationary, the amount of its produce as low, and its price as high.

The truth is, great and gratifying as have been the improvements in manufactures, they do not, perhaps, grratly exceed those which have, during the last ten or fifteen years, been introduced into agricultural operations. It is only about twenty years since the first steam-engine was erected in East Lothian for thrashing grain, an example which for some years was followed by few, but during the last eight or ten years they have rapidly increased, and we know for certain, that there are now upwards of sixty in the country. Judging from present appearances, there will not in five years hence be a farm in the county of the extent of 150 acres and upwards, and destitute of water-power, without its steam-engine.

In East Lothian—we speak chiefly of East Lothian, because better acquainted with its concerns than those of other counties, but agriculture is every where rapidly progressing—tile or furrow draining is but an introduction of yesterday, and already thousands of acres have undergone this admirable improvement. So lately as the summer of 1832, furrow draining was, we believe for the first time, practised in East Lothian, and in one field only. The field in questions had been previously thoroughly cross-drained, lime and manure had been poured into it with a liberal hand, but all without avail. At length drains were put into every other furrow, and immediately two pickles grew where but one would grow before; the first crop repaid the whole expenses incurred. On the same farm 100 acres, or all that requires it, have since been furrow drained, partly with stones and partly with tiles. On another farm, with which we happen to be acquainted 200 acres have been tile drained, partly in every alternate furrow,

the two intervening ridges being thrown into one, and partly in every furrow, during the summers 1833, 34, and 35; and on a third, 100 acres have been similarly dealt,with during the two last summers. We have ascertained that there are upwards of three millions of drain tiles at present annually manufactured in the country; and yet the tile-works in existence occasionally find it impossible to supply the demand, and others are about to be erected. Three millions of tiles are sufficient to drain 2,000 acres, putting a drain in every alternate furrow.

It is now about ten years since rape cake was brought under the notice of agriculturists in this part of the country, and it has been for some years in extensive use. One agriculturist, we know, of who manures the whole of his fallows with it, at annual expense of £600. Some hold that it is useful for one crop only, and affirm that it bears the same relation to common stable dung as a manure, that a dram does to a beefstake as articles of human subsistence. The agriculturist in question, however, who speaks from experience, thinks differently, and is of opinion that rape-cake has added three or four shillings to the [rent] value of land situated at a distance from towns where it is difficult to obtain a sufficient supply of manure. As another proof of the intelligent readiness with which everything likely to prove an improvement is adopted, we may instance chevalier barley, which, though only introduced three or four years ago, was last year almost the only variety cultivated in East Lothian.

These facts are sufficient to show that, amidst other improvements, agriculture has not been standing still. And as improvements in manufacturing machinery have led to a fall in the prices of manufactures,so to improved modes of agriculture are we indebted for the blessing of plenty at present enjoyed by the country. And we conceive they may also be received as proofs that agriculture, in the extensive meaning of the term, so far from being in a backward and depressed condition, is really thriving beyond all former precedent. Individual landlords and tenants are no doubt suffering, but not because agriculture is not in a promising state: but because of arrangements entered into years ago, in the expectation that the high prices caused by temporary circumstances would be permanent. It would be no more reasonable to say that the cotton manufactures are in a drooping state, because the price of cotton goods has fallen, than that agriculture is in distress, because agricultural produce fetches less in the market than it did some years ago. When cotton fell in price, those who happened to have large stocks on hand, or to have contracted for supplies before the fall, no doubt suffered loss—many were perhaps brought to ruin; but it did not follow that the cotton manufacturers were, as a body, engulfed in destruction. Nor, because individual farmers, with old leases on their hands, cannot fulfil their contracts with the present prices, can it fairly be agreed that agriculture is in distress. The capital which is so ungrudgingly expended in agricultural improvements, and the energy and ability displayed by agriculturists, is a symptom the reverse of discouraging, with respect to the condition and prospects of agriculture. When the price of every commodity has fallen so greatly, landlords cannot expect to receive the same nominal rents, as when the prices of every article of consumption were from one-third to one-half higher.

Those who are most diligent in the improvement of their estates will, as formerly, receive the highest rents. It will not do for them to imitate the lazy Lawrences of the south, who walk about with their hands in their pockets, and then complain of want. But it is from the south that the cry of agricultural distress has chiefly proceded; that is, from those who resolutely adhere to the imperfect and expensive custom of their forefathers, and refuse to adopt the most self-evident improvements—who still continue to employ from three to five horses at one plongh, and thrash their grain with a couple of sticks cut from the nearest plantation. It is ridiculous to hear such men complaining of distress. A spendthrift may as reasonably complain of empty pockets, or a drunkard of the effects of his dram-drinking.

From *British Husbandry.*

ON PUTRESCENT MANURES.

[Continued from p. 734 Vol. III.]

Night soil is distinguished from the ordure of all animals by the extreme fetidness of its smell, and is also known to be of a stronger or hotter kind, and probably differs in its own qualities in proportion to the sort of provision from which it is obtained, as there is every reason to suppose that the excrement arising out of animal food is of a more active nature than that which is the produce of a vegetable diet.* In all those places where the

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* 'Human ordure is full of oil and volatile alkaline salts.'—'The dung of carnivorous animals is also plentifully stored with oil.'—Hunter's Outlines of Agriculture, p. 13.

Arthur Young gives the result of two experiments on manures of different kinds and qualities, applied to potatoes on poor gravelly loam, in the following proportions per acre, as follows:—

			First crop.	Second crop.
No. 1	No manure	- - -	120 bushels	140 bushels
2	Night-soil	10 wagon-loads, each 96 bushels	600 „	640 „
3	Do.	6 „	650 „	500 „
4	Do.	2 „	500 „	300 „
5	Bones	10 „	650 „	640 „
6	Do.	6 „	640 „	560 „
7	Do.	2 „	560 „	240 „
8	Hog-dung	60 one-horse cart-loads „	480 „	300 „
9	Do.	30 „	480 „	160 „
10	Yard-compost	60 „	300 „	240 „
11	Do.	120 „	480 „	300 „
12	Do.	30 „	140 „	140 „

Survey of Hertfordshire, p. 177.

real value of this feculent matter is duly appreciated, and its preparation well understood, the aversion which its use excites is surmounted, and it is there preferred to all other manure. It has indeed been assumed that the excrements of a man, when used for this purpose, can be made to produce a sufficiency of corn and roots for his support; but, although that assertion has been exaggerated, yet were all the nourishment which could be extracted from this species of ordure made available, there can be but little reason to doubt that it would add largely to the production of the land; for it has been proved by numerous experiments, to rank far before the dung of any animal. In this country, however, it is very commonly allowed to become decomposed through want of care, and vast quantities are carried off by rivers from the large towns, and lost in the bosom of the ocean—an inattention which has partly arisen from the disgust occasioned by its odor, and partly through a prejudice to which that disgust has given rise.

This repugnance proceeds from an idea that this manure communicates an unpleasant flavor to plants grown in the land upon which it has been used; and it has been also thought to have a bad effect upon the soil. Both of these objections are however groundless when due care is applied to its management. Instances are indeed said to have occurred, in which horses have refused the hay made from grass which had been manured with night-soil; but, if credit is to be attached to the assertion, it must have been produced by its having been spread in a fresh state, and upon grass of very forward growth. In proof of this, is an instance, mentioned in the Norfolk Report, of a field newly laid down to grass, every part of which proved very poor, except two acres on which four wagon loads of night-soil were spread directly, without being mixed with any other manure. The field was fed off, and the effect of the night-soil is said to have been so great, that, 'while the rest of the field never seemed more than half filled with useful plants, this part thickened surprisingly, and grew most luxuriantly; so much so, that the cattle, neglecting the rest of the field, were perpetually feeding there, until by autumn it was pared down, like a fine green lawn by the side of a dusky, rough, ragged pasture.* In other accounts it is indeed reported as 'the most capital manure, of all other sorts, for pasture, two wagon-loads securing a carpet of herbage;'* and no bad effect is perceptible on vegetables, though kitchen-gardeners use it with profusion. It has been also asserted that nice judges of vegetables can distinguish a very unfavorable difference between the flavor of those grown in the vicinity of large towns or in the open country, and this they attribute partly to the use of night-soil; but it certainly communicates no unpleasant smell to the plants, nor even, after a very few days, to the ground on which it has been laid, for it is soon decomposed, and the effect complained of is doubtless more owing to the rapidity of the growth when forced by an excess of any stimulating manure, which renders them insipid; and were market-gardeners more sparing of the use of all dung, or were they to correct it into a compost by a judicious mixture of lime and earth, or a small portion of slaked lime, the evil complained of would, no doubt, be removed†.

All unpleasantness of odor may indeed be prevented by the mere use of ashes; and were those thrown upon the night-soil, or into privies which have no communication with sewers, the ashes made in every dwellinghouse would so completely absorb the fluid, that a solid heap of manure would be produced, that might be afterwards removed without difficulty or offensiveness. This, besides being common in many parts of the continent, is the regular practice throughout Hull;‡ and were it more generally followed in other towns, there can be no doubt that it would be attended with very beneficial effects to the agriculture of their neighborhood. It is also collected in considerable quantities in London; and there was, a few years ago, a large manufactory for its preparation, in which it was dried and exposed to the

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Two nearly similar experiments have been also recorded by the Rev. James Willis, President of the Christ Church Agricultural Society, in which the superiority of produce arising from the different sorts of dung was in the following order:—1st. That from pigs; 2nd. sheep; 3rd. horses; 4th. cows. In another, however, that from sheep was first, and pigs second; and Sir Humphrey Davy gives the preference to that of hard-fed horses, then of sheep and deer, and lastly oxen. Treaty on soils and Man.: Anon. p. 128—131.

* P. 172. The same Survey also mentions the great improvement of a piece of steril pasture by the application of night-soil mixed up with pond-mud, in the proportion of 7 wagon-loads of the former to 143 one-horse cart-loads of the latter. The soil was first laid upon the mud, the men then cut a trench through the heap, and throwing a small parcel into it, they worked it all to pieces. The compost was afterwards spread over the field at the total expense of £12; but at the present price of labor it would probably amount to half as much more.

* Survey of Essex, vol. ii. p. 241. One wagon-load, containing 90 bushels of night-soil, cost in London 15s., to which is to be added the charge of carriage to the farms, to which it is mostly conveyed by the Thames, or by canals. Much of it is used in Essex, mixed with five times the quantity of fresh earth and sometimes together with an equal quantity of the muck and chalk, in which proportions it is commonly used, at the rate of one wagon-load of night-soil; and the whole charge, including that of spreading, is calculated to be from £2 13s. to £3 3s. per acre. The common price of stable-dung in London is 2s to 2s. 6d. per hay-cart load, containing between 70 and 80 cubical feet: that of street-slop, called cold manure, is delivered by barges to the distance of about fifteen miles, by the canals, or within reach of one tide by the river, at about 3s. per ton. Middlesex Report, 2d. edit. p. 375.

† Russell's Treatise on Practical and Chemical Agriculture, p. 205. Derbysh Rep. vol. ii. p. 454. It is also contradicted by Count Gyllenborg, in his very erudite treatise on Chemical Agriculture, in which he mentions an instance of his having regularly watered a vine with putrid urine, but neither the grapes nor the wine contracted any bad taste. Pilkington's Translation, p. 79. *Slaked-lime* is, for this purpose, preferable to that which is *hot;* for the latter, when combined with animal matter, forms a manure which is not soluble in water.

‡ See a letter on the subject, detailing the practice, together with remarks on its extension, in the Farmer's Magazine, vol. x, p 497. Also the General Report of Scotland, vol. ii. p. 525; and Communications to the Board of Agriculture, vol. i. p. 317.

sun by spreading it upon flag-stones gently inclined, to allow it to drain, after which it was broken into pieces, and removed under cover, where it was partially mixed with lime and completely reduced to powder. In this state it was packed into barrels, and exported even to our colomes, where it was used as a top-dressing, but was chiefly employed by market-gardeners, who used to sow it in drills along with their seeds, and, judging by the price at which they bought it, there can be no doubt that they found its use to be singularly advantageous; but the process has been abandoned, for, having been carried on in the heart of the town, it occasioned complaints of its offensiveness. This, from the inconvenience attending its conveyance, unless by canals, has greatly prevented its use: considerable difficulty has also been found in reconciling farm-servants to working at the preparation of this manure; but that objection can be easily overcome by a slight gratuity, and, considing its great value as a dressing, it ought not to be neglected. It is said that one load, in its dry state, will be, in all cases, quite sufficient for three acres of drilled wheat.*

Its operation has been found quicker and more powerful than farm-yard dung; but not so lasting. Farmers who have used both on adjoining land have observed that the crops are always more exuberant in the first year where the night-soil has been laid, but that little or no difference has been afterwards perceptible.† Its effects, when spread alone upon field-crops, and directly ploughed in with a shallow furrow, are indeed so violent, that grain manured with it has been known to run entirely to straw; yet it has been used in that state as a dressing for turnips, and also for spring wheat, upon the fallow, upon thin and chalky soils, upon which the largest crop and the finest grain was grown upon a very extensive farm, upon which it was laid to the extent of three wagon loads per acres, though it probably was partly mixed up with the sweepings of streets.‡ It should however be incorporated with other substances; and as it is very difficult to procure it in any other than a nearly liquid state, it is proper that every means should be taken to secure it. A mixen should therefore be made consisting of fresh loam, decayed tanners' bark, peat or any other like substance, to the depth of about two feet, to which the night-soil must be drawn, and then carefully thrown over it with scoops to a moderate thickness; after which another layer should be added of loam, or a compost of the same substances, and in the same manner, though not quite so deep as before; then another of night-soil, until the whole has attained the proper height, when it is to be covered with the same materials, to which if a small quantity of quicklime be joined, or mixed with the layers, it will assist the decomposition of the heap, and its nauseous effluvia will be destroyed. To every load of night soil, about four or five times the same quantity of earth should be added, according to the nature of the soil, and to the degree of excitement intended to be applied to the land. It should then be regularly turned and throughly mixed, and may be used either for wheat or barley in the proportion of one wagon-load of night-soil, containing as much as four horses can fairly draw, to the acre; but it should be used more in the manner of a top-dressing than buried in the soil. It has been laid on in the large proportion of 40 double cart-loads, and it has afterwards been known to produce 5½ quarters per acre of spring-wheat; besides an uncommonly luxuriant crop of rye-grass and cover in the ensuing summer.† It is sometimes, also, mixed with the yard-dung for the purpose of exciting fermentation: this, however, is not advisable, for it produces its great effect in an unfermented state, and when thus mixed, its power is greatly lessened.

It is likewse converted into powder for the purpose of manure in Paris, and is also used throughout many parts of the Continent, but chiefly in the Netherlands, where, however, it is more commonly employed exclusively in a liquid state; of the preparation of which we extract the following account from the intelligent Report by Mr. Radcliff of the Agriculture of Eastern and Western Flanders.‡

Liquid manure.

'This consists of the urine of cattle, in which rape-cake has been dissolved, and in which the night-soil from the privies of the adjoining towns and villages has also been blended. This is gradually collected in subterraneous vaults of brick-work, at the verge of the farm next to the main road. Those receptacles are generally 40 feet long by 14 wide, and 7 or 8 feet deep, and in some cases are contrived with the crown of the arch so much below the surface of the ground, as to admit the plough to work over it. An aperture is left in the side, through which the manure is received from the cart by means of a shoot or trough; and at one end an opening is left to bring it up again by means of a temporary pump, which delivers it into carts or barrels. Another cistern, of double that size, is however for the most part formed under the range of stables, from each stall of which the urine is conducted to a common grating, through which it descends into the vault, from whence it is taken up by the pump; but in the best regulated, there is a partition in the cistern, with a valve to admit the contents of the first space into the second, to be preserved there free from the later acquisition, age adding considerably to its efficacy. The smallest of them will hold 1000 barrels of 38 gallons each, and in that quantity from two to four thousand rape-cakes, of 2lbs. each, will have been dissolved.

'This species of manure is indeed relied on be-

* The following has been recommended as the best mode of pulverizing night-soil:—'Spread it on a piece of grass; let it be well harrowed on a bright day; then put it under cover, and add a chaldron of lime to 4 loads of muck in that state, and it will become dry.' Rigby's Framingham, p. 102.

† Appendix to the General Report of Scotland, vol. ii. p. 82.

‡ Malcolm's Survey of Surrey and the Neighboring Counties, vol. ii. p. 28.

† Farmers's Magazine, vol. xiv. 161. It will not escape observation that the amount of this manure would have been better stated if the quantity had been accurately, ascertained in bushels; but that is a trouble which few farmers take, and information can only be given in the same manner in which it is obtained.

‡ Chap. iv. sect. ii. and chap. v. sect. iii.

yond any other upon all the light soils throughout Flanders; and even upon strong lands, originally so rich as to preclude the necessity of manure, it is now coming into great esteem, being considered applicable to most crops, and to all the varieties of soil.'

The crop upon which it is, however, chiefly bestowed, is *flax*, in the following manner and proportion. 'The field, after two or three ploughings and harrowings, is backed up in the centre, and ploughed round in but one set, so as to leave it without any furrow. A heavy roller is then drawn across the ploughing by three horses, the manure is spread equally over the entire surface, and, when well harrowed in by eight or nine strokes of the harrow, the seed is sown, which is also harrowed in by a light harrow, with wooden pins of less than 3 inches, and the surface, to conclude the operation, is again carefully rolled, so that nothing can exceed the smoothness and cultivated appearance of fields thus accurately prepared.'

The manner in which the manure is applied is in one or the other of the following modes, according to the distance. 'Where the cart plies, the manure is carried in a great sheet, closed at the corners by running strings, and secured to the four uprights of the cart: two men, stand one on each side, scatter it with hollow shovels upon the ground. Or, where barrels are made use of, each is carried by two men with poles, and set down at equal distances across the field, in the line of the rolling. There are two sets of vessels, which enable the men who deposite the loaded ones to bring back others empty. One man to each vessel, with a scoop, or rather a kind of bowl, with a long handle, spreads the manure so as to cover a certain space; and thus, by preserving the intervals correctly, they can precisely gauge the quantity for giving effect to any extent of surface.' It must, however, be admitted that this mode of application is somewhat clumsy, and that it might be improved. For the flax crop they are profuse, for they usually allow at the rate of 2480 gallons, beer measure, to the English acre.*

It thus appears that the dissolution of the oil-cake and sufficient time for the thorough putrefaction of the contents of the cistern is the only preparation of this manure; and it is stated that 21 acres, upon a farm of 200, are most luxuriantly manured for crops of flax and rape with the urine —exclusive of the dung—of forty-four head of cattle.† It must, however. be borne in mind that, although the Flemings have too just a sense of the value of money to lay it out with the prospect of a profitable return, yet the construction of such a building as that described is calculated at about £120: in this country it would probably cost considerably more; and, as it cannot be removed, it will not suit the means of every farmer to be at the expense, unless he can obtain the assistance of his landlord.

In another account, drawn up in consequence of an investigation upon a very extensive Flemish farm, by persons appointed to examine the plan, (which had been objected to by several intelligent practical men,) it was declared, 'that, owing to to the judicious concavity of the farm yard, there was as much moisture as was necessary to ferment the straw; and it is now ascertained that liquid manure is the most efficacious of any, and produces a third more effect than what is spread upon the surface. Hence, after the dung is fermented, they dilute it in water, and the liquid alone is carried to the field, and scattered over it, The earth immediately imbibes the liquid, which soon reaches the roots of the plants, and causes a rapid vegetation; whereas it is a long time before dung, in a solid state, fertilizes the soil. The straw that remains, after the dung is thus washed, is applied as manure for potatoes.‡ This mode has been, indeed, extensively carried on in other parts of the Continent, and its effects are considered as equally beneficial. There, by some farmers, water is regularly thrown over the dunghills, the oozings from which are allowed to drain into pits constructed for the purpose, and permitted to ferment before they are laid upon the land; or, by others, the whole of the dung and stall-litter is immersed in water, which, after a certain time, is pumped up from the pits, and applied in a liquid form; in which manner it is contended that this manure is not only more powerful in itself, but the quantity is thus doubled, for the solid contents of the dunghill remain the same. Experiments on an extensive scale have incontestably proved the efficacy of liquid manures upon sandy or other light soils, to which they impart consistency, and dispose them to retain moisture; nor can there be much doubt that in many cases the product of a single crop may be thus more than doubled, by its immediate contact with the plants.

On heavy land, we however coincide with the opinion of that eminent agriculturist the Baron de Thaër, from whom this account is taken, that it can never replace the solid contents of the dunghill; and, although not contesting the advantages of which it may be susceptible when applied to those soils and crops to which it is peculiarly applicable, we yet doubt the extraordiary degree of power ascribed to it. Before this mode of preparing manure be generally adopted, it should also be well ascertained whether the pains and expense attendant upon it do not overbalance those of our own common management; for although it

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* The average produce of crops upon a sandy loam, and the quantity of manure for each per English acre, when applied to the land, is thus stated:—

Wheat, 22¾ bushels - - - - - -	Either dung or compost, 10½ tons.
Rye, 28½ do. - - - - -	Farm-yard manure, do.
Oats, 51 5-6 do. - - - - -	Do. do.
Flax, 6½ do. of seed and stem, worth £17 16s. 9d.	- 866 cakes of rape, dissolved in 2480 gallons of urine.
Rape-seed, 32 2-5 do. - - - - -	580 do. dissolved in 3200 gallons of do.
Beans, 28⅓ do. - - - - - - -	14 cart-loads of liquid manure and the same quantity of stable-dung, equal together to 21 tons.
Potatoes, 8 5-6 tons - - - -	Do do. do.

—Radcliff's Report of the Agriculture of Eastern and Western Flanders, pp. 90, 91.

† Sir John Sinclair, however, says, in his 'Hints on the Agricultural State of the Netherlands,' that in another farm it required the urine of 68 cattle, of various ages and 32 horses, to manure 40 acres.

‡ Ibid. p. 67.

is possible that, in the former way, a more complete decomposition of the materials may be secured, and that thus new combinations of nutritive matter may be formed, of the precise effects of which we are ignorant, yet, in our usual method of preparation, when properly conducted, nothing should be lost: the liquid drained from the dung should be collected for further use; and it is only upon such a calculation of the charges, as well as experience of the effects of the manure, that a fair conclusion can be drawn regarding its real value.*

There is, perhaps, no part of the world in which the preparation and the practical application of vegetable and animal manure is so well understood as in China; but, owing to its overflowing population, almost the whole of the labor is performed by man, by which the number of working animals is so much reduced, that night-soil forms the principal dependence of the farmer. It is extensively employed in a dried state, and is sold, as an article of commerce, throughout the empire, in the form of cakes, mixed up with one-third of their weight of marl. It is, however, in its liquid state, as urine, that it is chiefly used, in combination with other substances, the account of which, as furnished by a gentleman who was long resident in the country, is too curious to be omitted.

Into a cask or jar is put a collection of putrid animal substances, consisting of flesh, fish, blood, &c., to which is added a certain quantity of urine, but the vessel is not completely filled. A mandarin, or officer of government, then attends, who, upon the vessel being closed, affixes his seal, and in which state it must remain for six months at least. When this, or a longer period, has elapsed, the mandarin removes his seal, and grants a certificate as to the quality of the preparation, which is shown by the proprietor, who cries it through the streets as a manure for gardens, and it is sold in quantities as small as an English pint. Before using, it is always diluted with four or five times its bulk of water, and it is extensively used for garden-crops, but universally in drills. The writer adds that he was informed by several intelligent Chinese, that human urine, thus prepared, forms a fourth part of all the manure employed in China, and which is never used until it has reached a high state of putridity.

That an article considered of so much importance in that country should in this, where agriculture has arrived at such great perfection, be so much neglected, is not easy to be accounted for. The quantity of urine voided daily by an individual of moderate size has been shown, by a series of experiments, to amount to about half a gallon, which, if due attention was paid to the collection of it, would according to the Flemish mode of its application, be a sufficient manure for half a rood of ground. Urine, when sufficiently diluted with water, forms a food highly conductive to the growth of plants; it is, indeed, thought to contain the essential elements of vegetables in a state of solution;† but its state of putrefaction requires great attention. Thus, it may observed that, in the hot months of summer, the pasture where the urine of cattle falls becomes marked by a rich dark green when rain fails soon after; but if the dry weather continues, the developement of the ammoniacal salts, arising from the putrefaction of the urine, then occasions it to burn up the grass; yet, on the contrary, an excess of moisture deprives it entirely of effect. Thus, the whole of the urine from a dwelling-house having been daily thrown on a piece of pasture during three months of the winter, it was found in the following summer to differ but little from the state of the rest of the field—it having suffered too much dilution from the rain to be capable of putrefaction. But, in the following June, a week's urine being put into a jar, and covered with a slate, where it remained until it had completely undergone that stage, was then mixed with four times its amount of water, and, when sprinkled at proper times on the same quantity of pasture, it soon occasioned a luxuriant vegetation.* It produces similar effects on green vegetable crops—nourishing them when applied in a diluted state, but scorching them and destroying their tender herbage so effectually when unmixed, as to impede their growth. There is indeed but little doubt that nutritious manure of any kind may be carried to an excess which becomes prejudicial to vegetation, particularly in its early stages. Naismith instances the steeping of three peas for twenty-four hours in a teacupful of strong dung-juice, and three in plain water: each three were planted half an inch deep in separate flower-pots filled with garden-mould, and the liquid in which they had been steeped poured into the pots over them. Those which had been steeped in plain water appeared above ground thirty hours before the others. Both advanced, but those in the dung-juice had the most weakly appearance. When the plants were about four inches high, the lower leaves of those fed by the dung-juice fell off; and in about four weeks after, the plants died, though they were daily watered, while those to which the water only had been administered continued healthy.† The haulm of a potato, too, the growth of which was pretty well advanced, fell off soon after it had been well wetted with urine in an advanced stage of putrefaction, and even the root itself was found reduced to a pulp.‡ It is, in fact, of a scorching quality, and its application to growing crops is not advisable during hot weather, unless mixed with a large proportion of simple water: of course it will not operate in the like manner upon fallow land, and it may be applied whenever the ground is in a fit state to absorb it readily, but much of its effect may be lost if it be not laid on at the time of sowing.

There is probably no species of manure so generally neglected, and yet so deserving of attention; for although the largest portion of what is produced in most farm-yards is there necessarily absorbed by the litter, and consequently profitably applied, yet large quantities are constantly allowed to run to waste. We have no means of ascertaining the amount of urine that may be voided by

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* Principes Raisonnés d'Agriculture, tome ii. § 612; and note of the translator, the Baron de Crude p. 349.

† Sir Humphrey Davy, Lectures, p. 257.

* Farmer's Magazine, vol. xx. p. 132.

† Ibid., vol. vii. p. 301.

‡ Essay on Manures: Appendix to the Gen. Rep. of Scotland, vol. ii. p. 108.

different animals in the course of a day, for the diversity of their size and of the kind of food on which they are supported would deprive such a calculation, upon a broad scale, of any pretension to accuracy. It has however been supposed that, if fed upon common white turnips, they yield about two-thirds of the weight—or about a gallon for every 12lbs.*—besides the water which they drink; and we have seen, that the cow which we have mentioned, produced, when fed on two-thirds of brewers' grains, only 45lbs. of dung out of 126lbs. of food, the greater portion of which was accordingly voided in urine. It must also be recollected that the cattle upon the farm to which we have alluded, in Flanders, consisted of only forty-four head, of which eight were horses, fed during the greater part of the winter upon dry food, yet they not only converted the entire produce of the straw and stable-dung into well-prepared compost of the usual description, which could not have been effected without a large supply of urine; but the savings from the stalls also furnished an additional quantity of liquid manure of the richest kind, equal to the culture of exhausting crops upon 21 acres of ground. It has been calculated too, in Scotland, that the urine of six cows or horses will enrich a quantity of earth sufficient to top-dress an English acre of grass-land;† but, considering the trouble and the prejudice attending it in this country, it is probable that the best way of preparing it for use is that recommended by a considerable farmer in Peebles-shire, who applies it in the following manner. He has a pit, about 12 yards square and 4 feet deep, which he fills with rich earth, or any such matters that may be at hand, and the urine of the cattle which he feeds is conveyed to the pit by a sewer, and spread equally over it. After this compost has received the greatest portion of the urine, which is about the latter end of April, when it is ready for the spring sowing, it is carefully turned over, when it shows symptoms of complete saturation; and in this way a large quantity of rich manure is raised, equal to about 280 cart-loads, 40 of which, per Scotch acre, when applied to the ground, he finds equal, if not superior, in its effects to his best dung. The expense of filling the pit only amounts to £6.‡

Throughout a great part of the rich low-lands in Tuscany, the manure is chiefly procured from night-soil, and preserved in large cisterns, in which it is steeped for several months in about three times its quantity of water; though some farmers content themselves with a large ditch, which is applied to the same purpose as the cistern. Into this every kind of putrescent matter is also thrown, and the putrid water thus produced is found to possess qualities of a very fertilizing nature. It is however principally used for garden ground, which is thus watered every fortnight; and the plants, but more particularly onions, thus acquire a prodigious size, without being in the least affected by any bad flavor arising from the manure. Neither is its smell, though most offensive for a a day or two after it has been laid upon the land, ever known to occason any prejudicial effect to the health of the peasantry.*

In a paper addressed to the Board of Agriculture by Baron Schulenburgh, one of its honorary members, he states that in Sweden the urine is collected from the farm-offices, and pumped over dung and other substances while in a state of compost. The contents of the privies are likewise regularly collected by scavengers in all the great towns, and carried, in many instances, to the distance of forty miles from Stockholm. It is then diluted with water, and laid chiefly upon meadow-land; but it is also applied to green crops, and the effects on the soil, though gradually diminishing, are generally considered to last during four years.†

In Switzerland, also, the *mistwasser*, or manure-water, is sprinkled over the surface of the meadows by means of large casks and perforated water-troughs, immediately after each cutting of the scythe, which makes the grass to spring up again with great vigor in a very short time; and it is well known that water, rendered fetid by the solution of vegetable or animal substances, is essentially serviceable to grass-land, as may be commonly perceived by its effects when thrown upon the fields in the neighborhood of stagnant ponds in which flax has been steeped. It is indeed highly probable that manures which are intended to act immediately upon the soil when laid on its surface, will have more effect upon grass-land when applied in a fluid state than in a solid form. It cannot, however, be denied that there are many instances on record in which no such consequences of its application have been remarked. Marshall relates an experiment conducted on his own farm with considerable care, in which the common drainage of the farm-yard—of course including rain-water—was laid upon two separate fields of young tares and clover, grown upon a sandy loam, at the rate of about 2500 gallons per acre: the liquor was of middling strength, very high colored and foul, but not puddly, and it was carried on in wet weather. No perceptible advantage was, however, observable on either those or the ensuing crops;‡ but the weather was not favorable. Some farmers, indeed, think these washings from the farm-yards, though of a brown color, are yet, in most instances, so diluted with rain, as not to be worth the expense of carriage;§ though other ac-

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* The weight of pure distilled water is 8lbs. per gallon: that of urine is heavier, in proportion to its composition.

† General Report of Scotland, vol. ii. p. 526. We cannot, however, avoid noticing the loose manner in which this calculation is supported; for the quantity of urine produced by six cows, or by the same number of horses, would be materially different.

‡ Mr Alexander. See the Survey of Peebles., p. 169.

* Simonde, Tableau de l'Agriculture Toscane, p. 35. Derbysh. Rep., vol. ii. p. 209.

† Communications to the Board of Agric., vol. i. art. xxxi.

‡ Minutes of Agriculture, Digest, p. 23.

§ It is stated in the Rutland Report by Mr. Parkinson, that the black water thus drained away from manure, has been tried frequently on land, without effect. He himself tried it, by having a dunghill made with a grip cut round it, with a descent to a kind of reservoir at one end of the hill, for this water to drain into, and then had it thrown back on that end, thinking thereby to preserve the loss of strength in the manure. But he

counts of dung-water say, that, when permitted to trickle slowly upon the sward of meadow-ground, it renders the grass soft and luxuriant.‡ In an expriment recorded in the Bath Papers, two spots of meadow were equally measured, and watered three times a week during a month together of nearly dry weather—the one with dark-colored stagnant water from a pond, and the other with clear river-water—at the end of which time, the first was far better than the other. The crop upon that part of the field which had the foul water was strong and succulent, of a deep healthy green, and 18 inches high, while the other though thick and high was yellowish, weak, and faint. On being made into hay, and separately kept, the former yielded nearly double the quantity and of superior quality to the latter; and the same effect was visible in the following year.§ There needs, indeed no argument to prove that it must possess some fertilizing properties, but, except it be rich in quality, as well as abundant in quantity it may be doubtful whether it be a profitable object of team labor.

Some extensive experiments upon the application of liquid manure—when confined to urine—have also been recently made in Scotland upon various crops, of which the following is a summary.

A cistern was constructed in the dung-court sufficiently large to contain the urine of from thirty-five to forty, and sometimes of seventy cows. The supply generally amounted to 360 gallons a week. When intended for use it was mixed with three or four times the same quantity of pond-water, and was taken out to the fields in a large butt containing 120 gallons, placed on wheels like a cart, to the hinder part of which there was attached a wooden box perforated with holes, through which the liquid ran out upon the ground in the manner of a common watering-cart.

No. 1.—When applied, in October, to *grass* which had been closely cropped by sheep,* the aftergrowth was not much increased, but the sward maintained a fresh green appearance during the winter, and it could be cut a month earlier than that which had not been so treated. Even in March it afforded a full bite; but should the grass be wanted for pasture, and not for cutting, the manure should not be applied later than December, as, when deferred until February, the cattle are rather shy in eating it.

No. 2.—The effect when applied to *clover-lea*, to be broken up for oats, was very perceptible; the increase of crop being about one-third.

No. 3.—For *wheat* it answers well on a light soil; but on stiff or clay land it does no good. If laid on when the land is wet, it is also of no perceptible benefit to the wheat; but if applied under more favorable circumstances, that crop would probably be increased about one-fourth.

No. 4.—To *barley* its application was found injurious; for, although the bulk of the crop was great, yet the straw was so soft and weak that it lodged.

No. 5.—*Potatoes* grew to a large size, but they were watery and quite unfit for the table; though the application of a little dung along with the urine improved their quality.

No. 6.—On *turnips* it was not found half so efficient as fermented dung.

It thus appears that this species of liquid manure applies best to grass; a doctrine which is corroborated by the experience of Mr. Harley, the proprietor of the celebrated dairy near Glasgow, who says—'that the advantages of irrigating grass-lands with cows' urine almost exceeds belief: last season some small fields were cut six times, averaging fifteen inches in length at each cutting, and the sward very thick.'† It was also found to succeed best after a shower, or when the ground was moist; but if laid on during sultry weather, it was advantageous to mix it with one-third of water; and although that was not thought necessary in spring or autumn, yet, judging from the quantity used, it may be presumed to have been rather profusely added. We learn, indeed, from Sir Humphry Davy, that—'during the putrefaction of urine, the greatest part of the soluble matter contained in it is dissipated.' He therefore recommends that 'it should be consumed as fresh as possible, but if not mixed with solid compost, it

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found that when the manure which came from that side of the dunghill was laid upon the land, it was weaker than the other; and he therefore concludes—'that when once this black water departs from the dung, that it is like blood let out of a vein, never to be applied again for the like purpose it was designed for in its original state.' Surv. of Rutlandsh., p. 91.

This, however, was doubtless occasioned by fresh fermentation being occasioned by the dung thus continually wetted, and thus losing its strength by repeated exhalation: but though it may be properly used as an argument for not thus applying even the drainage from manure, unless it should be in danger of becoming fire-fanged, yet that cannot be a motive for allowing it to run to waste.

‡ Bedfordshire Report, p. 505; Buckinghamshire do., p. 275.

§ Vol. i. p. 170. In pursuance of this experiment, the pond was drained and lined with clay, to prevent the water from oozing through it; drains were then laid into it from the stables, and into it were also emptied the contents of the privy and the offal from the kitchen, by which means the water became very putrid. A water-cart was then made, with a trough behind full of holes, and the meadow-land was watered with twenty cartsful, laid on either in the beginning of May, or after the cutting of the crop in July; the effect of which was superior, on both crop and rowen, to any other kind of manure.

Although the lining of the pond with clay was a good precaution, it might, however, be dispensed with; for, on draining the pond, the earth at the bottom would be found saturated with the drainage, and being scraped up, would make excellent manure.

* The account from which this was extracted says 'that the quantity allowed was 20,000 gallons per imperial acre;' but on calculating the urine at 360 gallons per week, and presuming it to have been mixed with four times the same quantity of water—as there stated—the whole amount furnished during the year would only be 93,600 gallons; yet the extent of ground thus manured amounted—

In the year	1828,	to 40	imperial acres
"	1830,	" 46	"
"	1831,	" 50	"
"	1832,	" 80	"

of which the one-half was watered again after the first crop of clover was cut in 1831 and 1832: there must therefore be an error in the quantity of urine. See the Quarterly Journal of Agriculture, No. xix. p. 95—97.

† Sir John Sinclair's Hints on the Agricultural System of the Netherlands, p. 63.

should be diluted with water, as, when undiluted, it contains too much animal matter to form a proper fluid nutriment for absorption by the roots of plants.' This theory, it will however be recollected, contradicts both the Flemish and the Chinese practice, which favors a protracted degree of fermentation; but he admits that 'putrid urine abounds in ammoniacal salts; and, though less active than fresh urine, that it is a very powerfull manure.'* It cannot, indeed, be doubted that, in whatever state it may be found the most effectual, it is at least well worthy of attention, and we recommend it strongly to the consideration of all experimental farmers.

Translated for the Farmer's Register, from the *Annales de l'Agriculture Francaise.*

ARTESIAN, OR BORED WELLS.

Extract of a letter from M. Mulot, Mechanical Engineer, to Count Héricart de Thury.

"I have now, sir, to inform you of a boring which I have just made at the Connt Desbassayns de Richemont's, at Cangey-sur-Cher, near Tours, department of Indre-et-Loire. My labors commenced on the 14th of June. In twenty one working days we sunk 210 feet in the chalk, that is 10 feet a day on an average. At this depth we found a first spring of water which gave 600 litres† in a minute, on a level with the surface of the soil. We continued the boring below the chalk into the sand and green sandstone and at 375 feet we reached a second source, which gave 1,000 litres of water in a minute. Since then the Count de Richemont has written me that the boring having been carried to 390 feet in the clays below the sandstone and green sands, the auger has caused a third stream of water to spout forth which gives 2,500 litres in a minute. And finally, my foreman writes me that this boring is no longer an artesian well, but a torrent which vomits forth water and sand, and that the quantity may be estimated at more thau 4,000 litres in a minute."

What a result! a well of 400 feet in a month, and 4,000 litres of water in a minute! after a drought which had burnt up every thing, consumed every thing, exhausted, dried up all the springs, brooks, wells, &c. I had announced to our borers that when they should have perforated the mass of chalk, they would find in the clays below the sand and sand stone abundant sheets of water, and that it would even be essential to take precautions against their rising. The boring which has just been made at the Count Desbassayns de Richemont's justifies my anticipations, and proves to us the possibility of obtaining water in this way on our extensive plains of chalk, which now offer only a hopeless aridity while they might be watered and converted into beautiful artificial meadows.

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* Elements of Agricultural Chemistry, 4to., p. 157.

†More than 880 English gallons.—Ed. Farm. Reg.

From Low's Elements of Practical Agriculture.

THE PROCESS OF SUMMER FALLOWING, IN BRITAIN.

The fallowing of land consists of a course of tillage continued for a certain time. When it is continued for an entire season, the process is termed the summer-fallow.

A course of tillage during only a part of the season is adopted in the case of preparing land for such crops as the turnip, the cabbage, the potato, which are thence frequently termed *fallow-crops.* This preparation consists of a series of ploughings, harrowings, and other operations, continued until the land is cleaned and otherwise fitted for the crop to be cultivated.

The extension of the culture of fallow-crops has greatly lessened the necessity of the summer-fallow; for the ground receiving a good preparation for this class of crops, and they, from the wide intervals at which they are cultivated, admitting of an efficient tillage during their growth, the farmer is more enabled to dispense with the necessity of devoting an entire year to the tillage of his land.

It is chiefly on the stiffer clays that the summer-fallow may be held to be an essential branch of farm management in this country. These are tilled with greater difficulty than the lighter soils, and do not always admit of the cultivation of those particular classes of plants as the turnip, which are suited to the lighter soils, and which render upon them an entire summer fallow unnecessary. A further reason exists for the adoption of the summer-fallow on the stiffer clays, namely, that the most valuable of their productions is wheat, for which the summer-fallow affords the best preparation. The manner of performing this process, therefore, merits the serious attention of farmers in this country.

Whatever be the nature of the soil to be fallowed, the first ploughing is in all cases to be given in autumn, or before winter, so that the soil may receive the influence of the winter frosts, and the growth of weeds be checked; for certain weeds will grow during the months of autumn, and partially in winter and in early spring; but by inverting the surface, and exposing the roots of those plants, and the under part of the sod, to the frost, the vegetation is checked until the process of ploughing can be resumed in the following spring.

In all cases the first ploughing should be as deep as the plough can conveniently be made to go. A good plough with a pair of horses can easily plough from eight to nine inches deep, and this is in most cases an efficient tillage. But should the nature of the soil render it necessary, an additional force of draught must be employed, so that the requisite depth of furrow may be given. Thus, in some of the marly and tenacious soils of England, four horses may be occasionally required to give sufficient depth to the first ploughing of fallow. Three horses may be also used; these, with a good plough, forming an efficient team, which may be managed by one ploughman.

With respect to the manner of laying the ridges, that kind of ploughing must be adopted which is calculated to keep the land dry during the months of winter, this being an essential point of prac-

tice in the class of soils for which the summer-fallow is required.

A good method of preserving the land in a dry state is cleaving with open furrows. In this manner each ridge is divided into two, so that good provision is made for allowing the free egress of water.

Sometimes the ridges may be gathered, and at other times, when the land is moderately dry, they may be cast. In whatever manner the ridges are ploughed, they remain in the same state till the following spring, and care therefore must be taken that all the cross-furrows and channels shall be made and carefully cleaned out, so that no water may stagnate upon the field.

In the ordinary management of the farm, the first operation in spring, as soon as the weather allows, is the sowing of the spring-crops of corn. When this essential labor of the season is completed, which in this country is generally from the middle to the end of April, the tillage of the land intended for such crops as the turnip, the potato, and other fallow-crops, is to be resumed. But though these are the first in the order of preparation, and must necessarily be first attended to, yet the summer-fallow should not be neglected at this early season, but should receive one ploughing not later than the month of May, and the earlier in the month the better.

Now this, the second ploughing of the summer-fallow, may be done in two ways. The land may be either cross-ploughed, or ploughed in the direction of the former ridges. On the lighter and drier soils, in the cases where such soils are subjected to the summer-fallow, the cross-ploughing is the better method. But, in the case of the stiffer clays, the ploughing in the direction of the former ridges is to be preferred; for this is a provision against the effects of heavy falls of rain, which, were they to occur at this early season, when the land was ploughed, without open furrows to carry off the water, might so saturate it as to render the subsequent tillage precareous and difficult.

The next ploughing, which is to be as early in June as the other labors of the farm will allow, is to be made across. Immediately after this ploughing, the land is to be harrowed by repeated double turns, the direction of each double turn crossing that of the previous one. These double turns are to be repeated four, five, or more times, as occasion may require; and the roots of all plants which are dragged to the surface by the harrows are to be carefully collected by the hand and laid in heaps. A cart then passing along the rows of heaps, the collected plants are to be forked or thrown into it, and carried off the ground. They are to be formed into a compost by being mixed with quick-lime, so as to destroy their vegetative powers.

Sometimes these weeds are burned on the ground, and their ashes spread upon the surface: but this practice is not to be imitated, the ashes yielding an inconsiderable quantity of manure as compared with that which is produced by forming the weeds into a compost.

It is of great importance at this period of the summer-fallow, to drag to the surface and collect as large a portion as possible of the roots of vivacious weeds in the ground; for, this being the period of active vegetation, every part of these roots which is left in the ground will grow again and extend itself.

It is by the repeated action of the harrows that these roots are detached from the soil and dragged to the surface. When necessary, the roller is also to be employed. This, bruising the clods or indurated masses of earth upon the surface, enables the teeth of the harrow to act upon them. When the roller passes over the ground, the harrows immediately follow.

At this time, too, the grubber may be employed, as subsidiary to the action of the harrow.

This is a period of the summer-fallow at which all obstructions arising from land-fast stones and other impediments to tillage are to be removed; and if drains are required, it is now convenient to form them, the stones collected upon the surface being led forward at once to the drains, and filled into them in the manner to be afterwards explained.

This, indeed, is merely matter of convenience when the stones are in readiness, for the time of summer-fallow is not really the best for the forming of drains, owing to the hazard of heavy rains occurring, and carrying the soil, which is then loose, into the drains. This, however, is but a contingency, and there is convenience in forming such drains as may be needed at this time: and not only at this time, but during all the subsequent operations of the summer-fallow, draining, the removing of obstructions to tillage, and other works, are carried on. The obstructions of this kind to be removed are, generally speaking, any thing that may impede the path of the plough, and interrupt the common operations of tillage—such are the roots of trees, stones, inequalities of the surface, and the like.

It has been seen, then, that, in the management of the summer-fallow, the first ploughing is to be given before winter, when the land is ploughed lengthwise, in such a manner as that the land shall be kept dry until the tillage can be resumed in the following spring; that the second ploughing is to be given as early as possible in May, and in the case of stiff soils, lengthwise; and that the third ploughing, which, in the common course of farm-labor, we may hope to accomplish in June, is to be given across, when the principal labor of harrowing, rolling, and disengaging weeds, is performed, and when opportunity is taken to begin to drain, clear the ground of stones, and perform similar operations required.

As soon after the last ploughing and cleaning as the state of the weather and the labors of the farm will allow, the fourth ploughing is to be given. This ploughing may be performed in two ways. It may either be given lengthwise, and the land formed into ridges, or the whole may be ploughed in large divisions, without regarding ridges, as in cross-ploughing.

The former method may be adopted when the season is critical, and the land stiff and naturally wet. This is in order to avoid further hazards from great falls of rain; for, by forming the land into ridges, it is placed in a state of comparative security. But it allows of a better subsequent tillage of the land to lay it flat, by ploughing it in large divisions without yet forming it into ridges.

In this case, the land may be ploughed in a direction at right angles to the previous ploughing, that is, in the direction in which the future ridges

are to run; but it will be better to plough somewhat diagonally, that is, nearly in the direction from corner to corner of the field. This is done in order that two successive ploughings may not be in one direction; for the next ploughing to be given, as we shall immediately see, must necessarily be lengthwise in the direction of the ridges. But by deviating from this direction with the ploughing now to be given, the two successive ploughings will cross each other, and thus the tilling will be better performed.

No sooner is this diagonal ploughing completed, than the process of harrowing, rolling and cleaning the ground of the roots of vivacious weeds is to be renewed, precisely as after the preceding ploughing. It is not necessary or expedient that the process of harrowing shall be carried further than is absolutely required to disengage the weeds; but to this extent it is important that it be carried, so that the land may now be cleaned.

These two ploughings, with their corresponding harrowings, are of the utmost importance in the management of the summer-fallow. If the weather has been favorable, the land may now be expected to be effectually cleaned, and thus far to be in good order. Sometimes a further ploughing may be required for the purpose of completing the cleaning process; but whether this be so or not, the land ought now to be formed into ridges. This is necessary, in order to provide against the contingency of heavy rains, which, were they to occur at this period, when the land is lying in a flat state, might so soak it as greatly to retard the future labors.

We now, therefore, proceed to strike the furrows in the manner formerly explained. The land is then ploughed and formed into ridges, and this completes the fifth ploughing which it has received. The land will generally be now ready to have the dung laid upon it. But in some cases it may require a sixth ploughing before it is sufficiently cleaned and prepared for the dung. In this case, the land being harrowed, and the remaining weeds collected as formerly, it is ploughed again in the line of the ridges.

We may proceed, however, upon the supposition that this further ploughing and cleaning are not required, and that the land, after the fifth ploughing, is ready for the application of the dung. This may bring us, in the ordinary course of farm-labor, to the month of August.

Now the dung, according to the practice before described, has been previously led out and laid in large heaps in the field, where it has undergone a certain degree of fermentation. Should this not have taken place sufficiently, the heaps must be turned, so that the dung may be brought to a fit state for use.

The dung is now conveyed to the land in carts from the heaps, the carts being driven along the ridges. It is dragged out from behind by the workman with the dung-drag into heaps, as nearly as possible of equal size, and at equal distances, in rows along each ridge. Sometimes, to ensure accuracy, the ridges are divided, by furrows run across them, into rectangular spaces, each space receiving its allotted quantity of dung. But in general the eye and practical knowledge of the workman will enable him to drag out and deposite the heaps in the quantity, and with the accuracy that may be required.

Several persons, who may be females or young lads, then spread out the dung all across the ridge, by means of light three-pronged forks. This operation should be done with much attention, so that the dung may be spread regularly over the ridge.

Close upon the work of the spreaders, the ploughs are to follow and cover the dung. This is done by gathering the ridge, so that, while the ploughing covers the dung, the curvature of the ridge is increased.

The dung being covered in this manner, and the ridge raised, the land is to remain untouched for a few weeks, so that the dung may be decomposed and incorporated with the soil. When the dung has been previously fermented in a proper manner, this incorporation will be completed in a very short time.

The land is now ready to receive what is called the seed-furrow, which is the ploughing given to it previous to the seeds being sown. In this ploughing the ridge is again gathered, but the ploughing being very shallow it has little effect in raising the ridge higher.

After this final ploughing, and upon the surface now exposed, the seeds, usually of wheat, are to be sown, in the manner to be afterwards described. This generally takes place about the middle of September or later, and completes the important operations of the summer-fallow and sowing of the wheat-seeds.

In this detail the manner of applying the dung has been described; but there is likewise to be considered the manner of applying lime, when this substance is to be laid upon the land in summer-fallow.

There are two periods at which the lime may be applied—either before the dung is laid on, or afterwards. In the former case, the lime may be laid on just after the land has been formed into ridges, and when it is ready to receive the dung.

The quicklime, as it is brought from the kilns, may be laid down in heaps of about five carts each, at regular distances, upon the head-lands or where convenient. In this case, it is brought to the farm as opportunity offers, and slacked slowly and regularly.

When we are prepared to spread it upon the ground, a person with a broad-pointed shovel is appointed to each heap. He fills his cart, drives it along the ridge, and spreads the lime abroad upon the surface, taking it out with his broad-pointed shovel from the cart behind; sometimes two carts and two men may be appointed for each heap, the one man filling the cart at the heap, and the other spreading the lime upon the ridge.

Both men and horses sometimes experience injury from the caustic effects of the lime, especially when the weather is moist. The face of the man may be defended by a thin handkerchief, and the back of the horse should be covered.

When the lime is spread, the land must be immediately harrowed, to incorporate the lime with the soil. This being done, the dung is to be spread upon the ground, and covered by the plough in the manner before described.

But frequently the dung is first spread, and the lime is not laid on until just before giving the seed-furrow. This answers very well, provided the land has lain a sufficient time after the dung has

been spread, so that it may be decomposed and mixed with the soil.

These details have an especial reference to the stiffer soils, which are those on which the summer-fallow is generally practised. When the lighter soils are to be fallowed, the process of cleaning is more easy, and there is less hazard of serious interruption from the state of the weather. The only variation with regard to the lighter soils that need be referred to, is in the first spring-ploughing. In the case of such soils, this ploughing may be given at once across, and the process of harrowing and cleaning then commenced. This is precisely the management pursued in the case of turnips and similar fallow-crops; so that, when the learner comprehends the operations of the summer-fallow thus far, he is acquainted with the manner of preparing the land for an extensive and important class of plants.

In the preceding detail the ordinary operations of the summer-fallow have been described, but the nature of the seasons, the state of the land, the prevailing weeds to be eradicated, and other circumstances, produce variations in the course of management, which, however, it is not necessary here to point out. They are little subject to rule, but are best determined by the judgment of the farmer, as the cases themselves arise. A more important purpose is served to the student of agriculture by pointing out to him the manner of managing the summer-fallow upon approved principles. Knowing this, a little experience will soon show him how to adopt those variations of practice which the state of the season and other circumstances may render expedient.

The process of the summer-fallow, conducted as it should be, enables us to effect the tillage of clay-lands in a manner calculated to eradicate weeds, and fit the land for bearing a lengthened rotation of crops.

After a complete summer-fallow, the land is seen to be in the best order which circumstances will allow. It acquires that mellowness, indicative of fertility, so familiar to the eye of the farmer, yet so difficult to be described. It is frequently observed by farmers, that clay-lands in this climate get into an adhesive, and, as it is termed, a sour state, by the long repetition of crops. The giving them from time to time the mellowing influence of a summer-fallow, during which weeds may be extirpated, and the manures applied in the most beneficial manner, is found to have the best effects in restoring the fertility of the soil and fitting it to yield an increased produce in succeeding years. One advantage, too of the summer-fallow, not to be disregarded, is, that it divides the labor of tilling a farm more regularly throughout the season.

From the (Boston) Horticultural Register.

ON THE ROSE.

Much has been written both in poetry and prose on this subject, yet it remains not only inexhaustible, but interesting; and what is still to be written is almost sure to find readers. It is true the plant is in itself almost inexhaustible, as there are two hundred and five known and described distinct botanical varieties, and nearly *two thousand* named sorts raised from seed: its cultivation comprises almost every refinement in horticulture, as it is propagated by most known methods of increasing plants, by seed, cuttings, layers, suckers, and budding. New and beautiful varieties are constantly produced from seed. Some species are hardy, others tender; some are difficult of cultivation, while the chief part require little care, and are therefore universally known and dispersed; the early monthly roses usher in the spring; during the summer their beauties are spread in profusion throughout the garden, and the Noisette with many others still linger and adorn the autumn, until the stern hand of frost arrests each vegetable form: even then they yield their charms to the ingenious hand of luxury, and ornament the greenhouse.

Their delights are not very evanescent; equally conspicuous in bud, in full perfection, and in fruit; add to these their unequalled fragrance, the chaste brilliancy of their tints, the wholesome medical properties of the whole rosaceous tribe, and we must cease to wonder at the general interest excited them, or that a unanimous voice has proclaimed the rose to be the queen of flowers, and that all hitherto written, said or sung in its praise, is received with attention by those who pay the homage justly due to the most beautiful of the vegetable creation.

There is something of passion mingled with our sentiments for the rose; we admire the beauty, or are struck with the magnificence or singular forms of other blossoms; but when we view the delicate, tender tints of the expanding bud, and enjoy the dilicious fragrance of the full blown flower, we can scarcely help feeling that we *love* the rose.

Botanists have divided the tribe of the roses into eleven sections.

1. *Simplicifolia.*—Simple-leaved, without stipules, (a leafy appendage at the base of the leaf or leaf-stalk,) the berry bristly. Of this there is only one species, a native of Persia, commonly called the berberry-leaved rose; this will explain what is meant by simple-leaved.

2. *Feroces.*—Fierce—from the very numerous thorns which cover the branches. Of this there are three species, one from Japan and two from Kamschatka; one of these latter, we have seen in gardens in this vicinity.

3. *Bracteatæ.*—With bracteas, (small leaves on the flower-stalk under the calyx.) Of this there are four varieties, amongst which are the well known *R. microphylla* and the *Macartney rose;* the foliage of these is shining and very beautiful; the fruit woolly.

4 *Cinnamoneæ.*—Character agreeing with the Cinnamon rose. Of this there are twenty-one varieties, including *Rosa lucida,* which ornaments the swamps near Boston with its flowers and dark fruit, and the Cinnamon rose, so common near cultivated grounds in this vicinity.

5. *Pimpinellifolia.*—From the resemblance of the leaves to those of the *pimpernel* or anagallis. To this section of forty-two varieties, belong the yellow American rose, *R. lutescens,* of Pursh, the sulphur-colored rose, the celebrated Scotch rose, *R. spinosissima,* of which above one hundred and seventy seedlings are named in catalogues, *R. stricta,* a native of New England, ond probably several others, which have been of late years discovered in Kentucky and in other

parts of the Union, and described by Rafinesque. This section may also be readily distinguished by the numerons leaflets, generally from seven to fifteen in number.

6. *Centifolia.*—Characters agreeing with what is usually called the hundred leaved rose. To this section of ten varieties belong the moss, the hundred leaved, the damask, and R. gallica; consequently, also, great part of the multitude of garden varieties before mentiond, which have been raised from seed.

From the damask is probably obtained most of the essential oil called attar of roses. If those who distil rose-water would leave it immediately after distillation in large shallow pans for two or three days, they would find an oily film on the top, which may be skimmed off with a feather, and the feather cleaned with a little warm water—this is true attar. In many parts of the east it is manufactured by throwing large quantities of rose leaves into shallow tanks filled with water; after some weeks (depending on the heat of the weather) the oil rises to the top, and is removed for sale. This section may be distinguished from the others by the plants bearing bristles as well as prickles, and by the pieces of the calyx called sepals being divided.

7. *Villosæ.*—Villous. Closely covered with long soft loose hairs. The white rose, *R. alba*, is included in this section, which therefore contains some of the most beautiful of the tribe; for instance, the *celestial, nova cælestis* (new celestial,) *bouquet blanc, boule de niege* (snow-ball,) *maiden's blush*, and thirty or forty others. The most distinguishing character of this section, is the straightness of the prickles, as in several varieties of the white rose the villousness is not very apparent without the microscope, the hairs being short and adhering close to the stem; the prickles, however, are to be considered as comparatively, not mathematically, straight.

8. *Rubiginosæ.*—Rusty. The under side of the leaves being generally more or less covered with brown, rusty-colored glands. To this section belong the delicous scented sweet-briers, the true Eglantine of the old poets, of which sixteen garden varieties have been enumerated, one of them mossy. The native sweet-brier is called by Pursh *Rosa suavolens;* Rafinesque and Bigelow call it *R. rubiginosa.* One of the section, *R. caryophyllacea*, a native of Podolia, Volhynia and Iberia, has a strong clove scent. A distinctive character of this division is the arched growth of the suckers; this must have been often remarked in the two years old shoots growing near Boston; also, the sepals (pieces of the calyx) are permanent, that is, remain on when the fruit is ripe.

9. *Caninæ.* Characters agreeing with *Rosa canina*, the dog rose. To this section belong not only the most numerous and common ornaments of the hedges in Europe, but also those valuable sorts the Chinese rose, R. indica and its var. odoratissima, the tea rose; likewise var. Noisettiana, the Noisette rose, with its delightful clusters of blossom. *R. semperflorens*, the everflowering China rose, and *R. pseudo indica*, the yellow Indian rose, are included in this division. I have the names of nearly fifty garden varieties of this section, the chief characters of which are the smoothness of leaves, the prickles hooked, and the peculiar and grateful flavor of the pulp of the fruit, which contains citric acid, and is often made into a conserve by boiling, or baking with sugar.

10. *Systyla.*—From two Greek words, alluding to the styles being connected together into an enlongated column. In this section are included all the climbing roses, as *R. sempervirens*, which in Europe is evergreen. I have never seen it here; the fruit is of an orange color, it grows rapidly, and soon covers a trellis with its numerous and fragrant flowers. Of this, the var. *roseclare* has large spreading corymbs of deep red blossoms, and is most probably a hybrid between this and R. indica. *R. multiflora*, of which the Boursault and Greville are varieties, also belongs to this section, as does *R. moschata*, from which it is supposed the Persian attar of roses is made; the flowers have a slight odor of musk. The bramble-leaved rose, *R. rubifolia*, a native of this country, is also to be faund in this division.

11th, and last, is *Banksianæ.*—Characters agreeing with the Banksia rose. The species of this section are distinguished by their long graceful, and sometimes climbing shoots, their drooping white and tinged flowers, and shining leaves of three or at most four leaflets; to it belong the native *R. setigera* of Michaux, the *R. lævigata* of Georgia, and several natives of China, one of which, *R. hystrix*, has purple fruit, and another, *R. fragrariflora*, has flowers in corymbs of the size and color of the strawberry.

There remain about forty or fifty varieties, which have not been sufficienrly examined to be yet to be classed in any of these sections; several of these are natives of North America, and particularly of Tennessee and Maryland.

To raise new varieties from seed, as is practised in France and Italy, is rather a tedious affair. Plantations are made, in which the varieties from which hybrids are desired are promiscuously planted, for the purpose of impregnation; the fruit or hips are ripe in October and November; the seeds may be separated by rubbing them in dry sand; they may be sown the following spring in a rich, damp, shady place; the hard shell will not, however, be sufficiently decayed to permit the seed to vegetate until the spring ensuing. The year after, they may be removed from the seed bed into rich, moist soil, protecting them carefully during the winter with litter and pine boughs. The third year; some will blossom, but the majority not until the fourth and fifth year. By something like this process, innumerable varieties have ben raised by M. Villaresi, of the Royal Gardens at Monza, in Lombardy, where there is a large shrubbery entirely of Magnolia grandiflora, and by many celebrated gardeners in France, as Messrs. Noisette, Cels, Soulange Bodin. In England, the climate is hardly warm enough to ripen the seed; consequently little has been done there, except in Scotch roses; but in this country there is ample opportunity of raising new and splendid varieties, and I trust the public will not be backward in encouraging the efforts. I am not acquainted with the exact method adopted by Messrs Winship, but think several of their seedling roses, exhibited this summer at the Horticultural Society's rooms, equal to many imported.

There are several good private collections of these seedlings varieties in the vicinity of Boston. The best I have yet seen is that of M. P. Wilder, Esq., of Dorchester, who certainly seems to have

spared no pains or expense in importing the choicest sorts; among them was a budded tree rose of *Mousseuse delafleche*, so conspicuous for the long moss which decorates the midrib and edges of the leaves, although the flower is small and only semi-double. There is another of this small-leaved moss variety in France, with a striped flower, (*Mouseuse panacheé*) which is worth growing. His striped unique rose, also budded on a tree, is the most perfect and charming of the tribe. The Mexican, Admirable borde rouge, Bobilina, perpetual Philip 1st, Le jeune Henri, Casimer Perier, Palavicini, and may others afforded me the highest gratification. I trust this gentleman will find leisure another season to form a regular Rosarium, where the flowers and habits of each variety may be studied at ease. The occupation of raising new varieties from seed, is almost as exciting as gambling in a lottery, particularly after being once successful in drawing the prize of a superior flower, and dedicating it to some person high in our esteem; I scarcely need add, how much more innocent, how much less liable to bitter regrets.

The easiest and quickest method of procuring a good collection of roses is by budding; the shoots produced from which will, if properly managed, generally flower the succeding summer. This operation, called shield budding, is very simple, and performed as follows: In August, choose a sound branch of a rose-bush of that year's growth, and make an incision with a sharp knife through the bark in the shape of a T; raise up the bark forming the edges of this incision from the wood with the nail, or better with a piece of smooth shingle: take a bud from the rose you desire, in the following manner—cut a slice out from the branch about an inch and a half long, and half the thickness of the branch, so that a bud may be about the middle of the slice; with the nail gently remove the woody part, leaving nothing but the bark and the bud, which must be distinctly visible in the bark, so that it is certain it has not separated with the woody part; insert the piece neatly under the incision; after insertion, cut the bark on which the bud is, so that the top fits exactly and closely with the top of the T, and tie up the wound with bass, not too tight. In about three weeks the adhesion of the bud to the stock will be complete. If it is desirable for it to shoot and make wood the same season, all shoots and buds below the operation must be removed, and the branch headed down, leaving one shoot above the bud inserted, to draw up the sap. This is desirable when a slight protection can be given during the winter, because by cutting down the shoot from the bud to two eyes in April, it is almost sure to have many flowers that summer. I pursued this plan last year with four plants—one a bud from Rosa Grevillea. I transplanted them into pots in October, kept them in the cellar during the winter, and then plunged them into the open ground the beginning of May, where they flowered in profusion. There is a difference in the stocks on which to perform this operasion of budding; the French, who excel in it, generally bud on a tall, strong sucker of a single wild rose, for the purpose of making a tree six or seven feet high, with a head of flowers; and these are exceedingly ornamental, dotted about in low shrubberies; but I have budded with great success on bushes of the common *semi-double white*, and on the *maiden's blush*. Last April, I transplanted from the woods two strong suckers of the common sweet-brier, six and seven feet high, and budded with *celestial*, *moss*, *single yellow* and *provins*, which have all succeeded, although they have yet made no shoots. I am told that they will not last more than two or three years, and that in their native situation they only endure this period: this is in some measure true; yet I have never seen one dead, without seeing a thriving young sucker by the side of it, which has evidently drawn away all the sap of the root, and left its predecessor to perish. Now one universal rule with these budded trees, is to keep them free from suckers, or they will quckly die; this is, therefore as true of the wild rose in England and in France, as with the sweet-brier here. But there is one point I have observed, both with the imported tree roses and with the sweet-brier stocks, that requires much attention—the bark when once wounded, even by roughly tearing off a thorn, seldom heals; the wound enlarges, and finally the brown and dead bark increases so as in a few seasons to become an irreparable injury. Whether this may be cured or stopped by covering the wound with a composition has yet to be tried. The Boursault rose, if tied to a trellis, is also an excellent stock on which to bud, and seldom fails.

Mr. J. W. Russell, of Mount Auburn, observes that to be successful in flowering the yellow tea rose, it is better to bud it on a young healthy multiflora or Greville rose, and at the time of heading down to re-pot it in a mixture of one half good fresh loam, the remainder leaf soil with a portion of sand, observing to give the pot a good drainage.

The most common method of propagating roses is by layers; that is, cutting a shoot half through and pegging it down, where cut, below the surface of the soil, bending up the end of the shoot; this operation is generally performed after the blossoms have ceased: but if a sacrifice be made of the blossoms, and they are layered early in July, and the flower buds be removed, they will make plants fit for removal the following spring; otherwise, they must remain one season in the nursery beds. The moss rose is more difficult to root than most others, and in this climate more tender. I have imported several; those protected lived, the others perished. This method of layering may likewise be adopted with shoots of roses budded, and thus the variety obtained with its own root, instead of having merely the budded stock, the tenure of whose existence is rather uncertain.

Many sorts throw out suckers; these may be removed at once in autumn, or in this climate better in the spring, heading them down to about three or four inches high.

The common monthly roses, *R. indica*, which include the dark red variety *sanguinea*, are best propagated by cuttings, which strike readily if taken off at a joint where the wood is beginning to ripen, and planted in sandy mould under a hand glass, or even without, if kept in the shade.

The French are generally considered to excel in the cultivation of the rose. The greater proportion of the soil used there is a rich, stiffish loam, with some manure; this composition is very retentive of moisture. Where this cannot be readily obtained, mulching the roots with decayed leaves and dung is restored to. The pruning as practised in Europe, would hardly suit here, but should be deferred until the spring, just when the

buds are beginning to swell; then, for bush roses, cut out all the old wood and every shoot to within six or eight inches of the surface of the soil; this materially strengthens the new shoots, and increases the size and beauty of the flowers; it also presents less space for the insects to deposite their eggs, and if the cuttings are burned, destroys many already laid. Climbing roses must only be thinned out from the wiry, straggling branches, and shortened a little, nailing or tying them neatly to the trellis which forms their support.

To prolong the bloom, pick off every flower, with the fruit attached, as soon as it has passed its perfection; this enables the other buds to come forward, and prevents their turning yellow and perishing.

The insects which attack the rose are chiefly a little brown grub, which eats into the buds—this can only be removed by picking; and the aphis, or green fly—a syringe and tobacco water will destroy these, and even plain water, if frequently applied, will cause such disturbance among them as to prevent much mischief.

The rose can hardly be placed any where without being ornamental: but having myself planted them as a hedge crowning a semicircular bank which terminated a lawn, and kept them cut low, so that the numerous blossoms reclined on the well-mown grass, I cannot but recommend this style. It may be also put in practice to form edgings round oval or circular beds of flowers or grass plots. A thick hedge of well-mingled sorts is always beautiful; and the effect may be prolonged by the old method of rubbing off the buds of every other plant as soon as they appear; later shoots will then be formed, which will only flower when their neighbors have finished. A hedge of of this description on the grass banks surrounding most of the houses in the country, would have a very delightful appearance.

J. E. T.

From the New York Farmer.

MONMOUTH AND MIDDLESEX AGRICULTURAL RAIL ROAD. SQUANCUM MARL.

The legislature of New Jersey, at the session just terminated, incorporated a company to construct a rail road from the Delaware and Raritan canal, at or near Scudder's mill, (which is near Princeton,) to the village of Freehold, (the county town of Monmouth,) from thence to the marl beds on Manasguan river; also a rail road from the village of Freehold to the tide waters of Raritan Bay, at Middletown Point, with a capital of $500,000, and a privilege of commencing the work when $85,000 shall be subscribed: and providing that the road shall be built within ten years. These will be strictly agricultural rail roads, and the transportation of the valuable marls will furnish the largest item of their income, although the transportation of mineral coal, lime, lumber, merchandise, passengers, and agricultural produce of various kinds on said roads, will be considerable. Time will not now permit me to go into a detail of the many benefits to be derived from the construction of these roads; and for the present I can only advert to a few facts, and make further particulars the subject of another communication.

A report of a Geological Survey of New Jersey, authorized by the legislature, and made by Henry D. Rogers, Professor of Geology and Mineralogy in the University of Pennsylvania, has just been published, from which I shall give you some extracts, to show the astonishing fertilizing properties of the marls to be transported on these rail roads: "The high, and deservedly high, name which the Squancum marl now boasts, was an inducement to me to subject it to chemical examination with especial care and rigor." "At the pits, which are very extensive, the marl is sold at the rate of 37½ cents the load. It is transported in wagons to a distance, in some directions, of 20 miles, and retailed, when hauled that far, at the rate of 10, or even 12½ cents per bushel—being very profitably spread on the soil at the rate of 25, or even 20 bushels to the acre. The fact that so small an amount of this marl is found efficacious to the soil, which, after two or three dressings, is permanently improved, and to a high pitch, by it, furnishes me one consideration for supposing too generally the marl is spread with a prodigality surpassing all the necessities of the land.

A specimen of the marl from Thrap's lowest layer, yielded me, after reiterated trials, uniformly about the following for its composition:—

Silica,	43.40
Protoxide of Iron,	21.60
Alumina,	6.40
Lime,	10.40
Potash,	14.48
Water,	4.40 in 100 grains.

"The quantity of potash is so remarkably great, that I have been led to assure myself of the true proportion by several analyses, proving the results by adopting different modes of separating the potash."

When these rail roads shall be made, vast quanties of this marl may be transported to distant places on the Delaware and Raritan Canal and the waters of Raritan Bay, the Hudson and East Rivers, and afforded on any of the landings within 50 or 60 miles of New York, for about 10 to 15 cents per bushel, and I consider it decidedly more valuable than leached ashes.

CINCINNATUS.

From the Genesee Farmer.

GEOLOGICAL SURVEY OF THE STATE OF NEW YORK.

Agreeably to a resolution of the assembly of last year, the Secretary of State has made a report in a relation to a geological survey of the state. He had been requested to report the most expedient method of obtaining a scientific and perfect account of its rocks, soils, and minerals, and of their localities; a list of all its mineralogical, botanical, and zoological productions with specimens; and an estimate of the expenses, including the cost of publishing three thousand copies of such report, with drawings and a geological map. We consider it a very able state paper.

The great importance attached to such investigations may be better understood by some of our readers, if we refer to the munificence of Stephen Van Rensselaer, who employed Professor Eaton, with assistants, four years in making a geological

and agricultural survey of the district adjoining the Erie Canal, besides being at the expense of various other examinations of great extent. This was performed twelve or fifteen years ago. Since that time Massachusetts, Tennessee, the two Carolinas, and Maryland, have either caused or directed geological researches to be made within their respective limits; and Virginia, New Jersey, and Pennsylvania have the subject before them. With these examples in view, we hope "the Empire State" will not prove recreant in the cause of science and practical utility, when her ample means so fully enable her to develope her own resources. The discoveries which her geologists may make, would be only a part of the benfits to be derived from this enterprise. Hundreds of her citizens would be stimulated to make closer observations; and when explorations shall be conducted in the broad light of science, we shall hear but little more of fortunes wasted in searching for minerals, or of the fruitless toils of the miner.

A few years ago £80,000 sterling were expended in searching for coal at Bexhill, in Sussex, England, "when," as Sir J. W. Herschell observes, "every geologist would at once have declared it abortive." "Mr. Townsend informs us," says Malte Brun, "that a pit was sunk for coal to the depth of six hundred fathoms at Bruham, near the chalk hills of Bradley Nole, and that the miners reached only to the uppermost beds of the great oolite." The history of mining operations in England abounds with such examples. It may be mentioned on the authority of the last writer, that the commissioners of the Bath road, sent ten miles for flints, while their wagons actually passed, without their knowing it, over a bed of flints for the greater part of the way. The stone of which the Bath Cathedral is built, was conveyed from the distance of four miles; it was not then known that the same stone might be obtained in the immediate vicinity; quarries have since been opened. If errors of a like nature are now less frequently committed—if pits are not so often sunk in vain—it is because practical men have availed themselves of the discoveries of geologists.

To these statements we may add the expensive attempt to procure salt water on the south shore of Lake Erie, in the neighborhood of Portland, which any geologist acquainted with *the dip of the strata* would at once have pronounced hopeless.

The Secretary proposes to divide the State into four districts. The first to consist of all the counties lying to the south or east of Delaware, Schoharie, Schenectady, and Saratoga, which are also to be included—containing 12,263 square miles. The *second* district to comprise the counties of Warren, Essex, Clinton, Franklin, Hamilton, and St. Lawrance—containing 9,692 square miles. The third district to include all other counties adjoining the Erie Canal and lying north of it, to the west bounds of Genessee and Orleans—containing 12,293 square miles. The *fourth* district is to consist of the remaining (14) counties, which are estimated at 11,594 square miles.

To each of these districts, it is proposed to appoint two geologists and a draughtsman, and one zoologist and one botanist for the whole state, each to be accompanied by a draughtsman. It is supposed that four years will be required to complete the survey; and the whole expense, including that of publication, is estimated at $104,000. A lower estimate, however, has been made on the suggestion of confining the examinations to geology; but we must indulge the hope that our legislators on this occasion, will act with a liberality worthy of themselves and of their country.

FINE WHITE MARBLE DISCOVERED NEAR GASTON.

A bed of beautiful white marble has lately been discovered near the Roanoke, and only five miles from Gaston, on the great railway route from Raleigh to Petersburg. The marble was exposed to view by the digging of a well. Together with the information of this interesting discovery, we received from Charles F. M. Garnett, Esq. a small specimen of the stone, which was polished by Mr. Davidson of Petersburg, an intelligent workman in marble, and who gives a very favorable report of the specimen, though stating that it was too small to indicate the value of large masses. We hope soon to have the means of giving a decisive report of the quality, and value of the marble. If the bed should not be too expensive to be quarried (on account of lying deep,) it will prove of much value to the adjacent country, even if used for no other purpose than to burn into lime for manure. Such a business, properly prosecuted, in such a locality as between Gaston and Raleigh, would furnish to the Railroad the conveyance of an immense amount of a new commodity, lime, and afterwards the additional quantity of crops which the lime would produce through all future time. We hope that the railroad companies will see that their own interest would direct that the conveyance of manures should be charged as little as possible—and that they will not imitate the short-sighted and stupid policy of the Virginia Legislature in imposing tolls on manures on the James River canal, which act as prohibitions on their transportation. To prevent or discourage the passage of manures on a canal that must receive the tolls on all future products of such manures, is truly a specimen of policy which, though it may have many equals in the code of Virginia, is such as ought to be expected only in the legislation of such countries as Egypt or Morocco.

The foregoing notice was in type several weeks ago, but was "crowded out" of the last No. by other matters. We have since received other particulars of the marble near Gaston, in the following communication. Similar notices from persons who have ascertained the existence of any newly discovered, or valuable geological feature in our country, would render much public service, by making known resources for improvement or profit, that are now scarcely, if at all, known.

SOME OF THE GEOLOGICAL FEATURES OF THE REGION SURROUNDING GASTON, ON THE ROANOKE.

Gaston, N. C., April 12th, 1836.

Believing that the geological features of this part of the country would be interesting to you, I

have concluded to advert to a few of the formations that occur near the falls of Roanoke river, near Gaston. The most interesting is a deposite of pure white statuary marble, on the lands of Wm. M. West, discovered in digging a well in his yard. The well is 36 feet deep, and the bottom of it is a solid stratum of the marble of which I have a specimen, a part of which has been shown to a lapidary who agrees with me in opinion as to the kind of marble. The breadth of the stratum we have not been able to decide, or its thickness—its direction, we think, for several reasons, is from north-east to south-west, coinciding with the general direction of all the different strata of rocks in this section of country, that I have examined. That these strata are in several places cut across by whinstone dikes, I do not consider an exception. This marble occupies the summit ridge between the waters of Roanoke and Tar river. The only other indication we have seen of it, is also on the summit ridge extending in a south-west coast from Mr. West's. I regret that the discovery of the marble is too recent to enable us to examine it thoroughly. On the same summit ridge, about two miles from Gaston, a fetid limestone and marl, with minute shells embedded in both, are found about sixteen feet from the surface, in a north-east course from Mr. West's. The discovery of this deposite is also recent, and no trial has been made of it in agriculture. It seems to be about five or six feet thick; and was perforated in digging a well. If the marble exists below it, as is not improbable, it was not reached.

Next to these two deposites of limestone, which are in a line from north-east to south-west, and not more than a mile higher up the river, is an interesting deposite of clay slate on both sides of the Roanoke, and running parallel to the same direction, from north-east to south-west; but only shows in the river valley, and dips under the hills on both sides, before it gets near the summit ridges that divide the water courses. The same stratum of clay slate is exposed a few miles north of Meherrin, in the lower part of Brunswick county, and not more than eight miles above Hicksford, and is there called the "*Pencil* Hill," from the slate being used for pencils, and answers the purpose very well. The deposite on the north side of Roanoke is much more valuable however, making the finest whetstones I have ever seen, except the oilstones, and are but little, if any, inferior to them, for carpenter's tools, hones and whetstones of every kind, where a fine edge is required, and expeditious sharpening. Some of it is, however, too soft for that use, but there is an abundance of the hard for whetstones to supply any demand. Both above and below these deposites, for three or four miles, in almost every stream, gold is found, but as yet to a limited extent. The best indications are on the south side of the river opposite to Gaston. Gold has also been found in some streams on the north side of the river, nearly opposite the deposites on the south side. These deposites on both sides of Roanoke, range north-east and south-west, with the richest deposite mine in North Carolina known here as Portis's mine near the corners of Nash, Warren and Halifax counties. Immediately above the deposite of clay slate, commence the chalybeate springs, of which there is one about two miles from Gaston on the north side of the river, and another seven miles higher up the river; and two wells have been dug not far from the first mentioned spring, the waters of which could not be used for domestic purposes on account of the large quantity of iron in them, producing the well-known effect of turning black, when any vegetable acid is put in them. These springs also range north-east and south-west with the chalybeate springs near Warrenton, known as Shocco, Parson's, and Kearney's springs—and in the intervening country are several others. All of these springs, as well as those near Gaston, have been frequently used with advantage by persons in feeble health, particularly when recovering from autumnal attacks of fever.

On the hill out of which the spring nearest to Gaston runs, is a considerable deposite of iron ore; being an oxide of iron, most of the specimens found on the surface consisting of small round pebbles cemented by pure oxide, and sometimes presenting the appearance of puddingstone or sandstone, according as the pebbles are large or very minute. Some of the specimens at the surface, however, are rich in ore, and no doubt would be richer below the surface, showing plainly the sources of the chalybeate waters. Ascending the Roanoke river, two or three miles from the clay slate strata, we come to very fine quarries of gneiss and granite on both sides of the river—stone on the south side being now worked for the Weldon bridge, and having formerly furnished most of the stone for the locks on the Weldon canal, and being to all appearance inexhaustible. This formation constitutes, probably, the bed of the river at Gaston as the soundings give rock all the way across, and it is found in the hills on each side. Still ascending the river, two or three miles further, we find a stratum of mica slate and large masses of granite. Perhaps it is proper to observe that a narrow whinstone dike crosses the river near Gaston, and crosses all the strata running nearly north and south. While on this subject, I will mention that I understand coal has been found in Granville county about 30 miles higher up the Roanoke than Gaston, but to what extent I am not informed.

If these few crude observations are worth your attention, you can use them as you think most useful.

EDMUND WILKINS.

P. S.—I have confined my remarks to this district of country, as I consider it interesting, and it is the only one in our State with which I am sufficiently acquainted by observation to speak with accuracy.

E. W.

From the Daily Advertiser.

MANUFACTURE OF BEET ROOT SUGAR.

We are indebted to Mr. Isnard for the following interesting communication, accompanied with a number of documents, which we regret that we have not room to notice at the present time, any further than to say that they fully confirm the statements contained in the letter.

Boston, March 28th 1836.

To the Editor of the Daily Advertiser:

Sir—If you should judge the present communication worthy of attention, it is at your disposal

In order to satisfy yourself concerning the authenticity of my statemente, I subjoin documents for your perusal, when at leisure.

The manufacture of sugar of beet has ceased to be an object of ridicule; the advantages that France draws from it are palpable and great, and the benefits which the manufacturers derive from it are now such that the French Minister of the Treasury has proposed to lay a tax upon it. France owes this new branch of industry to that great man whom she will honor through all times; for had it not been for his sagacity and powerful assistace, it would have shared the fate of many other improvements lying for ages, or dying in their infancy, once pronounced by ordinary men visionary projects.

The discovery that beet contains a perfect sugar, remained for over sixty years without any useful application; many attempts, however, had been made to derive the benefit of it; but those having made these attempts, being rather men of science than men of business, having operated only upon a small scale, with purely scientific views, and having made no calculations, either of expenditures or results, they had no ground to proceed upon. I undertook to solve that problem, and to that effect made the first, in France an experiment on a large scale, and by a sufficient reward induced a chemist to assist me.

The result of this experiment was transmitted to Napoleon on the 19th of March, 1811, and by his order rendered public; and though the birth of his son took place on the 21st of the same month, on the 25th following appeared the decree, a copy of which is among the subjoined documents. By this decree, as you will perceive, he created six experimental factories for the manufacturing of sugar, he appoints me the director of one of them, which factory he gives to me in property, as a reward for my labor, and for having *(perfectonné)* improved the process for obtaining the sugar of beet. Such was my zeal, that my factory in the fall of 1813 was prepared, and all the beet raised by me or contracted for, so as to produce 1,500 lbs. a day of brown sugar, and the same refined. The first entry of the allies into France caused the total ruin of my establishment. Up to 1816 political events were unfavorable for sugar making, but from that year this manufacture was resumed, and has since never ceased to increase and improve; it is now computed that over 300 such manufactories exist, producing together yearly about from 18 to 20 millions of pounds of brown sugar.

Now, sir, since the making of sugar of beet begins to attract the attention of some agriculturists of this country, I deem it of interest for them, and to gratify the curiosity of others, here to state what were the calculations made in France in 1832, (the latest date of my information) and add a few observations respecting the benefits one may derive by the mere culture of beets in this country. It is generally admitted, viz:

That one ton (2,000 lbs.) of beet delivered at the factory costs	$3.
That the expenses to work one ton of beet for obtaining its sugar,	$4.
That 2,000 lbs. beets will yield 100 lbs. brown sugar, costing	$7.

Thus one pound of brown sugar, good quality, costs 7 cents.

By a comparison of the expenses of culture in various parts of France, and on various soils and situation, the average expenses of cultivating there the extent of an American acre of land, are as follows: Rent and taxes $5.60; ploughing and harrowing $2.88; manure $1.93; sowing 50 cents; weedings and hoeing $2.40; gathering $1.60; carting $1.56; farmer's profit $4. Making a total of $21.46.

The produce varies according to the quality of the soil, the quantity of manure used, and the care bestowed on the culture—as we have taken the average of the produce, which is of 7 tons. Some yield as much as 15 tons.

The four dollars profit the French farmer derives from this culture, on every acre, is far from being the only one; the others are:

1st. The good state in which the field is left after gathering the beets—no further manure being wanted for the succeeding crop, which crop experience has proved to be always more abundant and of a better quality when succeeding the culture of beets; owing to the destruction of the noxious weeds, caused by weeding the beets when young, and prevented from growing, by the thick foliage of the beet when strong.

2d. The facility afforded the cultivator to apply to the culture of beet, lands which he formerly let lie fallow, and consequently, without any additional expenses of rent and taxes, deriving as good a revenue from this land, as from any other producing the most.

3d. The advantages the cultivator derives by the purchase from the manufacturer, of the pomace of beet at a price not higher than beets, when experience has proved this pomace is worth for him fifty per cent. more; for in fact it is after all but beet—deprived of two thirds of water, and consequently a more nourishing food for his cattle, perfectly fitted for fattening them, producing wonders in that respect; which could not be expected from beets in their natural state.

The following is a statement of the receipt and expenditnre of a sugar establishment, as reported to the Society for the encouragement of manufactures in France. The whole work was performed in 91 days.

Purchase of 500 tons of beet delivered at 3 20,		$1600 00
1638 days' work of men at 20 *sous* 455 do. of women at 12s. 364 do. of children at 5s.		400 40
For extra work during the night,		109 20
40 cubic feet wood for fuel daily,(28 cords 3-100 at $16 7100 per cord,)		473 20
Sundry materials for manufacturing purposes,		813 60
Food for 18 oxen used in the mill,		163 00
Interest on $3,000 at 15 per cent. for wear and tear,		450 00
Rent of buildings,		120 00
Total,		$4130 00
Deduct for molasses sold for	$320	
125 tons pomace at $3 20	400	
Value of materials left,	30	750

Produce of 50,000 lbs. brown sugar at 6 7-10 cents		$3380 00
Sale of 36,000 lbs. 1st quality at $0 15	$8400	
Sale of 14,000 2nd quality at 0 10	1400	9800
Profit,		$3420 00

Should this notice be favorably received, I have at your disposal a few particulars respecting the cultivation of beets.

I am respectfully, sir,
your most obd't serv't,
MAX'N ISNARD,
French Vice Consul for Boston.

For the Farmers' Register.

THE CORN CROP THE GREATEST LANDKILLER.

Wardsfork, Charlotte Co.

The great waste of soil which appears in Virginia and other places, where corn and tobacco have been cultivated, has been universally charged to the latter. I am entirely willing that it should bear its just proportion of blame, for I have no partiality for the weed; but then "let the devil have his due." The Indian corn crop which has received comparatively but few of the curses of the friends of improvement, in my opinion has produced by far the greatest destruction of soil. For this opinion, I beg leave to offer the following reasons.

In the first place, the corn crop calls into action a much greater proportion of land. What a vast surface it takes in the present exhausted state of the country to sustain this crop! What myriads of acres are annually in action, and thousands of expensive teams are put in motion, for the same purpose! I will here observe, by the way, that I was glad to see a writer in the Register, who signs W., is teaching how to do with less of this land-destroying article. Tobacco is much more modest in its demands, and a smaller space being sufficient for it, of course its ravages on soil have not been as great.

Secondly—there is some little intrinsic difference in favor of the tobacco crop, and more in favor of the wheat crop than either. Land for corn is held longer in requisition than for tobacco, and of course gets more of the washing rains—and to do the corn crop justice, requires more ploughing, which subjects the soil to greater hazard. These repeated ploughings, which is the life of the corn, is the death of the land.

Thirdly—in the present wasted condition of our soil, it requires such a quantity of ground for a corn crop, that a number of chafed spots are embraced every year, which are most rapidly hastening into gulleys; for the poorer the spot, the easier it is killed. And the constant practice of bringing these galled places into cultivation, has exposed thousands of acres annually to the ravages of destructive rains and frost. It is this rubbing and scratching over those raw places, of our fields after worthless nubbings, that has given all that blood-chilling appearance of agricultural cruelty which has so marred the face of this once lovely State. Tobacco has slayed its thousands, but corn its tens of thousands. The practice of tending corn year after year, on the same field, without resting, with the most relentless rigor of cultivation, has given to the once pleasant face of the land the ghastly grin of exhaustion and disease; and this unfilial conduct of their sons, if persisted in, will bring down the gray hairs of the mother State with sorrow to the grave. Some attempts have been made to prevent the great annual loss of soil in cultivation, by hill-side ditches and horizontal ploughing; and it is true, that these have effected something in this way; but there come rains every year, which "make a joke" of these contrivances, and to the great mortification of the friends of improvement, the soil is seen taking its old course to the ocean, as obstinately as if obeying one of the fixed laws of nature, which, in fact, is the case. This levelling the broken surface of hilly fields by horizontal ploughing is in reality so contrary to nature, that I am not surprised to see her giving marked indications of her displeasure by sending those waterspouts now and then, which leave thousands of breaks and furrows in the beds through which the water has dashed, giving the hill-sides the appearance of having wept bitterly. I noticed last summer, after a lashing rain, one of those sad spectacles—a corn field in tears—(if I may be allowed the phrase) it being one of those remarkable instances in which Dame Nature is seen weeping over her own deeds of destruction—the hill-side ditches had given way on all sides the corn beds, those ropes of sand, had snapped in ten thousand places—galls and gulleys opened on all sides, and as for the poor soil, it was gone to its long home. I really felt the force of the injunction, "weep with those that weep," and mingled my best sympathies, both with nature and the good genius of improvement. My fancy became a little busy, while I looked over this scene of destruction, which soon presented to my mind's eye such a horrid picture of gulleys, galls, and broken trenches, that I began to think seriously of Red River. And truly, but for the efforts that are now making through agricultural papers and societies, I solemnly believe we should realize all that the most lively imagination can anticipate on this subject. But to return—I think it impossible, by any contrivance, to prevent our hilly lands, this side of the mountains, from washing, at least to that degree which will prevent their improvement much, if any. Make a dam across the bottom which conveys the water from a corn field well ploughed and trenched, and one will be amazed at the quantity of washing which will be caught in one season. I have set such land traps, not only for my own runaway soil, but also for my neighbor's—though having caught his, I never sent it back.

Well! What is to be done? Why, let us tend less corn, and more wheat and clover, and confine the cultivation of corn to the more level portions of our estates, and, according to W. make less serve; to raise grass, orchards, wheat and such things, on our more broken lands, that require but little ploughing, and expose the soil to but little hazard. This arrangement could be made conveniently on many plantations, more especially if we were to rely less upon a corn crop for the support of horses. If we go on tending our hilly lands in corn, I verily believe our latest agricultural history will tell the same melancholy tale that it does now—that this is a land of gulleys.

I. R.

For the Farmers' Register.

ON THE KNOWLEDGE, AND IGNORANCE, OF POLITICAL ECONOMY.

A plausible writer, in a miscellaneous essay in the last Register, remarks, that he should be pleased to see a sort of day of judgment arrive when all the arguments and all the theories which have been broached since the year 1789, to 1836, and especially those on the subject of the U. States' tariff, should be brought before the bar of public opinion. He also states, that the late Chas. Fox boasted his ignorance of political economy. I was not before aware of this. I have seen somewhere, that Mr. Fox admited he had never read Smith's *Wealth of Nations*—that the reasonings were too abstruse, and the calculations too minute for his comprehension. If Mr. Fox was ignorant of political economy, he was entirely unfit for the station of Prime Minister of England, to the attainment of which the energies of his life were directed—one which he held, for a short time in early life, and also in his last days. Perhaps political economy, in all its ramifications, was never perfectly understood by any man. It fluctuates in a degree with the times—depends much upon the existing state of a country, and its relative position to other nations. But there are some principles established by experience and sanctioned by time—and, that trade, when unfettered is generally most prosperous, is one. The late Mr. Huskisson, who, unlike Mr. Fox, valued himself a little for his knowledge of political economy, attributes to this cause the superiority which England had attained over the nations of the continent of Europe. Another maxim now received by statesmen is, monopolies, corporations, premiums and pensions, are generally mischievous to the body politic, and that corporations for profit ought never to be granted, except for some great public benefit, to which private wealth and individual efforts are inadequate. In Maryland, to our reproach, we find companies incorporated for spinning cotton, making gunpowder, duck and partridge shot, and digging alum; and when the value of marl becomes well understood, I should not be at all surprised if a company be incorporated for raising marl. Legislators, who pass such laws, may, with Mr. Fox, boast they have no knowledge of political economy.

The name of Charles Fox, in this country, has been generally associated with liberty, and that of his successful rival, William Pitt, with tyranny. Mr. Fox was a man of high talents, a great debater, and a patriot out of power. Had he have been Prime Minister of England, when citizens Robespierre, and Danton, and Marat, were giving practical lessons of liberty to the French, and sending the genius of universal emancipation into the kingdoms of Europe to disenthral the people and dethrone the monarchs, I have a suspicion, that Mr. Fox, instead of looking with the indifference he did upon their schemes, from the philosophic shades of St. Ann's Hill, would have been imbued with a little of the same spirit which Governor McDuffie now entertains for these philanthropic reformers, Tappan, Garrison, & Co. Sir Robert Walpole was a corrupt Minister, but a wise man; and he tells us, that nothing sharpens more the edge of patriotism than disappointment. If this great Court of Review should embrace politicians from the year 1789 to 1836, each in this land of liberty, where we were "all federalists, all republicans," now all whigs, all Jacksonians—all for the Republic, none for themselves perhaps a few illustrations of Sir Robert's maxim may be found.

I have always deemed the protective tariff a germ of Bonaparte's continental system. At the conclusion of the late war, having foiled Great Britain, in arms, we had good dispositions to check her commercial influence, and by the joint efforts of some hot spirits of the south, some cool spirits of the north, and some calculating spirits of the west, the protective tariff was concocted. It is now in a quiet slumber—sleeping away its life—yearly diminishing in vitality, and will finally expire in 1842. I greatly prefer its "day of judgment" be postponed till after death. Bringing it before the bar, before that period, might break the enchantment, and re-kindle the fierce fires which had nearly scorched some of our southern brethren.

———.

Eastern Shore, Md., March 20th, 1836.

GYPSUM DISCOVERED IN QUANTITY IN PRINCE EDWARD COUNTY.

To the Editor of the Farmers' Register.

Prince Edward, April 7th, 1836.

Since the attention of the Legislature and the public generally seems to be directed to the laudable object of developing the resources of Virginia, I shall be gratified, if you have not more important matter for publication, that you will give insertion to the following facts.

It is probably known to you that parts of the county of Prince Edward have been supposed, from some cause, to contain that precious metal, gold; and to ascertain the truth of this supposition, pits have been sunk in various parts of it, but particularly in the upper or western end. It is matter of history, that the alchymists, in their wild schemes of discovering the elixir of health, and philosophers' stone, found out many facts of the utmost importance to the science of chemistry: and thus it has happened with the miners; for although they have been unsuccessful as it regards the object of their search, yet they have supplied a hint, which, improved upon, has terminated in a most fortunate result.

My plantation, which lies in the vicinity of Walker's Church, was one of those sites which were thought to give promise of gold; and accordingly it was dug upon, though not by myself, for I happen to be one of those who think that more of this precious metal is to be obtained within a foot of the surface, than at any greater depth. However, though no gold-digger by profession, still I was prompted by curiosity to visit the pits frequently, and observe operations. The matter that was excavated, afforded then but little interest to me; and after spending a sufficiency of labor, time and money, and after fairly testing the best specimens of auriferous ore, the project of gold-digging was abandoned.

Previous to this, I had never used any gypsum, and if I had ever seen any, had not noticed it particularly. About a year after gold-mining had ceased on my farm, I began the cultivation of clover, and having learned the efficacy of gypsum as

a manure in accelerating the growth of this plant, I determined to make an experiment, and found it succeed far beyond my most sanguine expectations.

From the striking resemblance of certain stones thrown out by the miners to the rock gypsum, I obtained from market, I was induced to make trial of the former on my clover fields in such a manner as to institute a fair comparison of its effects with the true gypsum, which I was the more willing to do as I had not procured enough of the latter to plaster my whole crop. It is highly gratifying, sir, for me to inform you of the results of my experiments. I had anticipated an entire failure—judge then of my satisfaction, when I found my success complete.

The three field on which I experimented, I divided as follows:

Field No. 1 was laid out into two equal portions longitudinally, and plastered one half with the imported, and the other half with the material found on my own plantation. The clover plastered with the latter was but slightly inferior to that manured by the former.

Field No. 2 I divided into three equal parts, and sowed each of those thirds lying at the sides of the field with the imported plaster, and the third lying centrally I sowed with that found on my farm. The difference in the crop was scarcely perceptible.

Field No. 3 I separated into nine equal sections, running transversely the whole breadth of the field; and in order to arrive at a more determinate conclusion, I sowed the first of these with my own plaster, selected from the best lumps, the second with the imported, and the third was left unsown. I went over the whole field in this way, beginning with the domestic, succeeded by the imported, and leaving every third section unplastered. The result was perfectly satisfactory. The clover manured with the domestic plaster was among the finest I have ever seen—that with the imported not as good, and that left unmanured scarcely worth the cutting.

I am thus particular, sir, in order to show you the evidence on which I rest my belief of the benefit; and to convince you that this is not a matter of speculation, but one that has been submitted to rigid experiment. Those who are well acquainted with the aspect of the plaster, would probably have been able to pronounce upon its character by a bare inspection, but when united to its appearance, we have proofs of its fertilizing effects, we can have no just grounds of doubt.

After being personally convinced of the utility of this substance found near my residence, I determined to make diligent search for it, and ascertain, if possible, whether it might not be found in quantities sufficient to supply that portion of the county in which I live; and after sinking pits at various localities, I at length struck upon a points where the mineral appeared to be very abundant; and, after patiently digging to a considerable depth, and making excavations at several adjacent points, I have concluded, if all that is gypsum which I suppose, that the supply is inexhaustible. To make assurance doubly sure, I sent parcels of the substance to the Professor of Chymistry at Hampden Sydney College, with a request that he would analyze it and notify me of the result. He returned for answer, that he had never examined purer specimens of the sulphate of lime; that he was happy in the anticipation of the benefits that would arise from this discovery; and finally exhorted me to make it known through the medium of some public journal.

The high price of the gypsum, and the difficulty of transporting it, render it an object of the utmost importance that farmers should be enabled to procure it at some convenient distance, and at such a moderate charge as to made it a profitable manure. Many of those persons whose lands most require the application of this enriching agent, have not the means to purchase and transport it to their farms; and those whose circumstances are better, and who have made use of it, find that the expenseof obtaining it, swallows up most of the profits arising from its employment. Here then is a great difficulty to be obviated in the use of the foreign gypsum, and certainly nothing will tend more to this end than the discovery of quarries on our own soil, from which persons may at any time obtain whatever quantities they please, and almost on their own terms.

Indulge me, sir, in conclusion, in making a few observations on the renovating influences of this and other manures now being found in different parts of the State. The time was, when it was believed that the waste lands of Virginia could never be serviceable to the agriculturist; and the patriot had the heart-sickening spectacle every where presented to him of the progressive destruction of the land of his birth without any hope of its ever being reclaimed. But, sir, since the establishment of your publication, Virginians have been encouraged to look around them and see what might be done: and what has been the consequence? We now confidently anticipate the day when old Virginia, like old England, will be as it were a garden; when her fields shall be crowned with golden harvests; when her lawns shall vie in verdure with the rich vales of the west; when her pastures shall be teeming with cattle—her surface intersected with rail roads and canals—and when her population shall be dense busy and prosperous. And what is to cause this magic change? Doubtless gypsum, and the various species of marls, are to be the chief agents. Much of the present fertility of several counties in the State is attributable to the former, whilst others in a different region are as much indebted to the latter. The day is fast approaching when every part of Virginia will have some convenient manure adapted to the soil—when the Old Dominion shall take her harp from the willows and in cheerful strains celebrate her release from the captivity of sterility, and resume that proud and dignified station among the States of the Union, which is due to the mother of the greatest and best.

Yours, very respectfully,

JOHN FRANCIS.

RAIL ROADS IN NORTH CAROLINA.

To the Editor of the Farmers' Register.

SIR: Having for immediate purposes made a partial reply to P. Q., I now take up the subject in its graver and more important aspect. It is now fully seventeen years since I imbibed the idea of the possibility of making the Chesapeake the great

mart of American commerce, and Norfolk the great gate through which it must pass. Hence, I must be pardoned, if having this object in view, I have overlooked local interests, local prejudices, and local partialities.

P. Q. charges me with being "regardless of the feelings of those who have *long* and *zealously* labored to promote a *favorite* scheme"—with having, by one *fatal* stroke of my pencil dashed their cherished hopes and raised a rival to crush "this favorite scheme." As to the length of time and zeal of promotion exhibited in these worthy gentlemen, I cannot but confess my ignorance; and apprehend, if the columns of the Richmond Enquirer, and the Petersburg Intelligencer, and Roanoke Advocate, soliciting attention to this subject, and those of the Raleigh papers pronouncing any thing but a Rail Road to Newbern as illusory in its character, and destructive to the interests of N. Carolina, are consulted—if, I repeat it, these journals are consulted, I apprehend that it will prove that for "long" we may read "short," and for "zealously" we shall read "apathetic." As to the "deep damnation" I have dealt to a favorite object, and the *fatal* stroke of my pencil, which, like the thunderbolt of a *Jupiter tonans et fulminans*, was to dash all their cherished hopes, I am happy to see not only that nothing like it has occurred, but to learn the attempt made to complete the subscription on the 15th March, 1836, has, according to a paragraph in the Raleigh Register, nearly, if not quite, succeeded—a circumstance, upon which I do most heartily congratulate them *and* myself, as I still ardently hope such a direction may yet be given to this capital and these exertions, as shall make a road, which will be both productive of profit to them, as contributors, and of honor to them as the citizens of a great, wealthy, important, and intelligent community. I trust, I repeat, it will yet be instrumental to a Road pervading the State from the banks of the Pee Dee to the Roanoke.

If I may use the expression, there is a noble conspiracy forming for conveying the trade of the west to New York and Philadelphia. A careful examination of the subject induces me to believe that Louisville and Baltimore will be connected. Lieut. Dutton, (Doc. 1, session 1835-6, p. 185,) says, the Ohio can be rendered navigable at all seasons with certainty, only "*by a series of locks and dams.*" The New York, papers boast that they will make the Alleghany, and Pittsburg, as much a New York as a Pennsylvania river and city—a circumstance which is practicable, as if the Ohio can thus be improved to the extreme of the Alleghany, there is no question the navigation of both will be made subservient to the views of the "Empire State." But still the improvement of the Ohio to a given point, say Catletsburg, will, if the "Dominion" does but make due exertions, bring an immense trade to every harbour in the Chesapeake, especially if by the adoption of the light draught steamers, and the lock and dam system, other rivers can be rendered navigable, during wet *and* dry seasons, and seasons not interrupted by frost, as are those of the north. As to the steamer, one has just reached Savannah of 27 inches draught, from Liverpool—a circumstance, that, it is to be hoped, will either lead to the remission or reduction of the duty on them, or to a discovery that they can be built at Pittsburg or elsewhere in the U. States.

A report of the trade of Louisville from the Board of Internal Improvement, in Kentucky, states the total tonnage of the port at 306,400, and that 1256 steamers pass the canal in the year. A Wheeling paper, speaking of the trade between Louisville and Pittsburg, states that there are sixty steamers, of course of a light draught, annually employed. It forms its estimate for only from 6 to 8 months, and makes out that 433200 tons of merchandise are transported annually in steamboats, on the Ohio, between Pittsburg and Louisville—amounting in value to more than $16,000,000—so that on a river rendered permanently navigable by the lock and dam system, and navigated by small steamers, as pronounced to be practicable by Lieut. Dutton, it is probable the amount will be doubled, or made $32,000,000.

Such are a few of the circumstances around us. I think they demonstrate not only the necessity, but the ability of the South to create a market in the Chesapeake for the benefit of that section. How is the end to be effected? The trade of the west must be brought by rail road and canal to the Atlantic at Savannah, Beaufort and Charleston, S. C., Wilmington, N. C., and Norfolk. Savannah must ship the cotton of the west, yielding part of her trade to Charleston, that city in its turn, giving a portion of hers to N. Carolina; and all combining to make the Chesapeake emphatically the great emporium of the South. "Thus," to use the words of the report from Yorkville, S. C., "would the South be connected by a tie of no ordinary character with Virginia, and thus would the great bond of southern union, so eminently desirable, so imperiously necessary in the present momentous crisis, be at once more generally and completely secured. Already united with Georgia, by the strong and enduring sympathies of commercial interests—our destinies indissolubly bound up with those of N. Carolina—towards Virginia, the relation of a neighbor, added to that of long-tried friendship—and to crown all, the great west made our fire-side associates and commercial friends—with such an union, with such elements of common fidelity, what combination of interest, of envy or of passion, by whatever diabolical spirit its fell purposes may be inspired, can prevail against us?"

To produce such a state of things, and give to Baltimore, and to every port in the Chesapeake, the whole of the middle west, the Chesapeake and Ohio Canal, the Baltimore and Ohio Rail Road, the James River improvement, and indeed every interest in their vicinity, are concerned.

What then should be the course of a North Carolina Road? Should it be such as to divide, instead of concentering the interest of the State? What is the language of the Yorkville report as to the upper route? That admirable paper "suggests, that the future participation of Virginia is not to be neglected, and incidentally to *her* participation in the ultimate accomplishment of a *great chain of railways, leading through the northern and middle States.* As an evidence that this is no visionary anticipation, it may be mentioned, that a Rail Road is now in process of construction, between Richmond and Petersburg, Va., and Weldon, N. C.; and at the last session of the Legislatures of these States, a similar incorporation was granted, to connect Weldon with Evansham in Virginia, from which road, at some point, not precisely known to your committee, *it is now* in

contemplation to construct a rail road to pass near Greensborough, N. C., through Lexington to Salisbury, N. C., at which point, but about 50 miles of railway would connect Salisbury with the great commercial highway, *should either of the routes here recommended be found practicable.*"

These routes are "east of the Broad, through Richland, Fairfield, Chester, and York, penetrating N. C., so as to intersect the counties of Lincoln, Rutherford, Burke, and perhaps Buncombe, and having for its immediate vicinity nearly all the wealthy section of the south-west of N. Carolina;" *or* "to follow the Valley of the Broad and Catawba." In North Carolina, the outlet recommended *appears* to be nearly that, for Col. Long's reconnoisance of which, Mr. White of Kentucky, has moved in Congress—Linville Mountain to the sources of the Licking, or Big Sandy. The report continues, "Thus by one continued chain of rail roads, would Charleston and Cincinnati (Louisville and Lexington) be connected with Richmond and Petersburg. * * * * In such a state of things, it is easy to perceive that nearly *all the travelling* of business, and certainly all that of pleasure, between the north and the south, *will be diverted*, from the sea board, *into the new, more rapid, and more convenient channel we have attempted to describe.*" And, if the low counties of the Carolinas, and Georgia, do not exert themselves, such will, such must be the case.

But, to exhibit the inducements, I must continue my quotation from this enlightened report. Many of these routes are through the finest mineral countries in the world. In York, Union, and Spartanburg, are to be found iron, marble, granite, lime, the latter of which could be sold at Columbia, of course at Fayetteville, &c., &c., to great advantage. Next are noticed, the iron foundries of Lincoln, and the salt works of Virginia. As to the Yadkin, if the lock and dam system will succeed, all the country it waters, as well as Wilmington and Fayetteville, may be much benefited.

P. Q. is vehement as to the Wilmington and Halifax Road. "It will not receive enough to keep it in repair." Does he recollect the efforts of Philadelphia? Is he aware of the projected road to Pokomoke, on the Eastern Shore, the object of which is, to dispense with the steamer up the bay, and to lessen its passage from Norfolk? He may rest assured, that a road from Darlington and Harleesville, S. C., to Fayetteville, to Halifax *via* Waynesborough, Tarborough, &c. &c., would make travellers forget that Raleigh was in existence. He should refer to Col. Long's report (Doc. 177, session 1834–5.) He will there find this route distinctly recognized. It is one which I hope will be recognized by Congress, in a discussion that must be in progress before the recess.

I would here, at the risk of being desultory, express my hope that some member of Congress will take up the question of the iron steam boat. The following paragraph speaks volumes on the subject, especially illustrated as they are, by the arrival of one at Savannah; and by the fact, that a bill for the remission of duties on a steam boat, passed the Senate of the U. S., the 17th Feb., 1836. This boat must be the one which has reached Savannah by the Alcyone from Liverpool. The one alluded to in the annexed paragraph having been built in London at the publication of the notice:

"There is at present building an iron steam boat 120 feet long and 26 feet wide, at Mr. Laid's yard, on the other side of the river. The vessel is to be taken to pieces and sent across the Atlantic to Savannah, between which place and Augusta, she is intended to ply with cotton, &c.—She is so constructed as only to draw two feet and a half of water, and yet to carry 600 bales of cotton on her deck, which, when the wood work is added, will be upwards of forty feet wide. Her burden is 375 tons, carpenter's measure. We believe that she is the largest steam boat ever built in this porte: she is certainly one of the most curious and ingenious.

"A wrought iron steam boat has been completed in London for the East India Company, to be employed in the navigation of the Ganges. It is 125 feet in length, entirely of iron, except the deck, carries an engine of 60 horse power, and draws less than two feet of water."

In addition, we are indebted for the following to the National Intelligencer: "The wrought iron steam boat, ordered from England, has arrived (in pieces) at Savannah. Her length is 120 feet, her beam 26 feet, and her depth (of hold) 7½ feet. She is estimated to draw, *with all her machinery, and every thing aboard*, 2 feet 3 inches, and will have an English low pressure engine of 46 horse power."

I cannot avoid making some observations on the heterodox notions of P. Q., as to the power with which *he* would invest legislatures in the management of rail roads, or indeed any public improvement. I want but to learn the result of the inspection laws in New York and Virginia, and the sagacity of N. Carolina, in refusing twelve years since, $10 or 20,000 to Hamilton Fulton for an experimental rail road to Swift Creek, to pronounce that in legislatures, the "collected wisdom" of the nation is not to be found, and therefore, they ought [not] to be entrusted with the powers "of protecting roads from competition."

P. Q. forgets that in an industrious and enterprising country, roads ought to be a matter of expense. The manufacturer at Petersburg, whose stock is at 25 per cent premium, might as well grumble at being obliged to furnish new machinery to render the profit producing this premium permanent, as the citizens of a country complain of the expense of rail roads; and forgetting that they *indirectly* add infinitely more to the wealth of the community than any charge they create in repair, call for the odious monoply advocated by P. Q. If he wants for proof, of what a monoply will do, or rather thank the Supreme Court of the U. S., an *imaginary* monopoly, I will furnish him with one. The Charleston and Hamburg company are now avoiding a wealthy country, and one well calculated for a Rail Road, and running their road in a section totally opposite in character and result. This can only be done to ensure a still greater extent to their monopoly.

Indeed, joint stock companies, as concocted in the U. S., are fast becoming nuisances. Coke, in his Reports, alludes to a book published in 1610, being a "declaration of His Majesty's pleasure," &c., p. 13, "that monopolies are against the laws of the realm; and, therefore, expressly commands that no suiter *presume* to move him to grant

them." His Majesty, King Numbers, has a power superior to this. * * * * *
* * * * * * G. L. C.

From the Raleigh Register.

THE MOUNTAINS OF CAROLINA.

The younger Michaux, on his way from the valley of the Mississippi, in the fall of 1802, passed through the counties of Yancy and Burke; and in the small volume, containing an account of his travels, that was published soon after his return to Paris, the opinion is expressed, that in these counties, the Alleghany Mountains attain their greatest elevation. He mentions, in evidence that this belief is well founded, that his father found trees and plants growing upon them, which he did not meet with again before reaching Canada.

The geology of these counties has some peculiar features. They were visited during the last summer, for the purpose of tracing the boundaries of their rock formations, and along with other collateral objects, provisions was made for measuring the heights of their principal mountains, with their bearings and distances from each other. Some gentlemen in the west, who expressed an interest in the subject, were promised an account of the results; and they are communicated with some explanatory remarks, to the Register, in the belief that they will not be without interest for persons living in other parts of the state.

It is well known that the mercury in the tube of the barometer is continually oscillating, especially in the high latitudes; so that we cannot, from a single observation of its height, infer the elevation of any place above the level of the sea. But Daville found from a comparison of the Meteorological Registers kept with great care for a series of years in different parts of Europe, that the changes are simultaneous and similar in places considerably remote from each other.

One barometer was therefore stationed at Morganton, and a record kept of its movements by Mr. Pearson of that place. This served as a standard. The observations made at the same time (nearly,) upon the tops of the mountains and at Morganton, furnished the data for calculating their elevations above that village, and the mean of ten observations, on successive days, gave what is probably a near approximation to the height of Morganton above the level of the sea—968 feet. Deducting from this the descent to the bed of the Catawba, there remains only about 800 feet of fall between the ford leading over Linville and the sea. This will not be regarded as an extravagant estimate by those who are acquainted with this stream, and by such as have had no experience in investigations of this kind it will be condemned as falling far below the truth.

North of the point where the James River leaves the mountains, the first high ridge of the Alleghanies is called the Blue Ridge. In North Carolina, this name is applied to the range that separates the eastern and western waters. This is commonly the first high mountain, but not always. The Table Mountain, which forms so fine and striking a feature in the scenery about Morganton, is not a part of the Blue Ridge, but a spur or outlier. It seems, when seen from Morganton, to be a round tower rising perpendicularly from the summit of the first range of the Alleghanies. It is, in fact, a narrow ridge, affording a very fine prospect of the fertile valley of the Catawba, and its tributaries on the south-east and east, and of nature in her wildest dress, where the Linville pours over the rocks along a deep ravine, wholly untenanted and uncultivated, and of a vast extent of mountain peaks and ranges on the north east. Its top is 2,453 feet above Morganton, and a little more than 15 miles distant in a right line.

The Grandfather, 17 miles from the Table, and 28 from Morganton, has hitherto been generally supposed the highest mountain in North Carolina. But it is found that, being difficult of access and enveloping himself in mystery, it has happened to him, as it does not infrequently to men, placed in corresponding circumstances, that he has enjoyed a reputation to which he is by no means entitled. The best point of departure for ascending the Grandfather is the Globe Settlement, near the head of John's River, where the traveller will find a pleasant home in a beautiful valley, and at James Riddle's 1,600 feet above, on the side of the mountain, a faithful and intelligent guide. From the distance and the roughness of the way, it will prove, as my friends and quandum pupils, Messrs. Clingman and Rose Borough can testify, a severe day's labor to a person inexperienced in travelling on foot, to visit the top and return. The summit is 4,588 feet above Morganton.

We may notice here an error in the act of the legislature establishing Yancy County, and assigning its boundaries. It is said, that they shall run with the Tennessee "line to the county of Ashe: thence with the line of said company to the Grandmother Mountain," &c. It is here supposed that the Grandmother is either the same mountain with the Grandfather, or a continuation of it, and in the Ashe line, whereas she is 3 or 4 miles distant from both. She sits humbly and submissively at the feet of her venerable spouse, with the little Grandson between—a pattern to all good dames in the country below. From the fact that her head is crowned with the balsam fir (no very certain sign) she may probably have an elevation of 2,600 feet. If there should seem to be any thing to warrant a suspicion of a want of affection in this worthy couple, in the distance to which they have located themselves from each other, their great bulk should not, whilst we are forming our judgment, be neglected.

The Roan Mountain is 15 miles from the Grandfather, and 35 N. W. from Morganton, lying directly over or beyond, the Hawksbill. It touches the Tennessee line, but the highest peaks are in North Carolina. This is the easiest of access, the most beautiful, and will best repay the labor of ascending it, of all our high mountains. By one of my friends, the preference is given to the Yellow, which is in fact a continuation of the Roan, on account of the symmetry of its form; but it is considerably lower. With the exception of a body of rocks looking like the ruins of an old castle, near its south western extremity, the top of the Roan may be described as a vast meadow, without a tree to obstruct the prospect; where a person may mount his horse and gallop for a mile or two, with Carolina at his feet on one side, and Tennessee on the other, and a green ocean of Mountains raised into tremendous billows imme-

diately about him. It is the Elysium of a southern botanist,as a number of plants are found growing in this cold and humid atmosphere, which are not seen again till we have gone some hundreds of miles farther north. It is the pasture ground for the young horses of the whole country about it, during the summer. We found strawberries here in the greatest abundance and of the finest quality, in regard to both size and flavor, on the 30th of July. The elevation of this mountain was twice taken, on the 22d and 30th July—with a difference of 28 feet in the results—5,042 and 5,070 above Morganton. Of these measurements, the latter was made with the greatest care and in the most favorable weather. The height assigned to the other mountains was also rudely verified from this, by means of a water leved.

The Black Mountain, lying mostly in Yancy, but forming through a part of its course the boundary between Yancy and Buncombe, is a long ridge at a medium distance of about 30 miles from Morganton. It has some peaks of a greater elevation than any point that has hitherto been measured in North America, east of the Rocky Mountains, and is believed to be the highest mountain in the United States. It is a matter of considerable difficulty, in the case of a long ridge like this, that swells here and there into a knob two or three hundred feet higher than its neighbors, from our inability to determine how much of the apparent elevation of one, amongst a number, is due to its nearness, and how much to height. The Black Mountain cost nearly a week's labor in fixing upon the peak to be measured and the measurement. We ascended first the summit nearest the road leading from Morganton to Burnsville, and found it 92 feet lower than the Roan, with peaks considerably more elevated farther south. Yeates's Knob, between the waters of Caney River and Ivey, was next represented as over-topping every thing in that part of the country. Though higher than the Grandfather, it proved to be considerably lower than the Roan, but from its summit we had a fine view of the Black Mountain Ridge sweeping round in a sort of circle, at the distance of 8 or 10 miles, and were able to distinguish the highest Knobs. Two were very nearly equal, but the one at the head of the ridge between the north and middle forks of Caney River, was finally fixed upon as the highest. On its top the Barometer stood at 23.807 inches; and it has an elevation of 5,508 feet above Morganton, or 6,476 above the level of the sea.

The mean elevation of Yancy county above Burke, is about 1,600 feet; so that it is about 2,500 above the level of the sea. The ford of Toe River, near Thomas Young's is 1,308, and Burnsville 1,632 above Morganton. The ascent of the Blue Ridge from Turkey Cove Creek to the Gap, is 1,665 feet.

For the sake of comparison the following heights are given. The first five are copied from Worcester's Gazetteer:

Mount Washington, in New Hampshire, hitherto accounted the highest Mountain in the United States—highest peak	6.234
Mansfield Mountain—Vermont,	4.279
Saddle Mountain—Massachusetts,	4.000
Round Top—highest of the Catskills,	3.804
Peaks of Otter—Virginia,	3.955
Table Mountain—Burke, N. Carolina,	3.421
Grandfather,	5.556
Yeates's Knob,	5.895
Black, at Thomas Young's,	5.946
Roan,	6.038
Highest Peak of the Black,	6.476

There are other high mountains at no great distance from those that were measured, as the Bald Mountain in the western part of Yancy and the White Top in Virginia, which are nearly, if not quite, as high as the Roan. In the south eastern part of Haywood county, near the South Carolina line, there is a tremendous pile, and between the counties of Haywood and Macon and the state of Tennessee, the Unikee Mountain swells to a great elevation. But these appear to the eye to be lower than the Black.

As the Western Mountains, now that their respectability in regard to height and interest is ascertained, are likely to attract an occasional visiter from below the ridge, and perhaps from the neighborhood of the coast, a few directions answering the purpose of a "Guide to the Mountains," are added.

The Pilot "has not infrequently been the *Ultima Thule*, or rather the *Columna Herculis*, by which the excursions of such as have travelled heretofore in search of mountain scenery have been limited. It is a remarkable mountain, but after having been for a time amongst the giants of the west, one cannot help feeling some contempt for the Pilot as he passes it on his return. Its height is just about that of the low gaps in the Blue Ridge.

By such as would see more of the mountains, the first point to be reached is Morganton. From this place the Table Mountain is frequently visited; is easy of access, and will hardly be neglected by any one who is in search of beautiful and romantic views and prospects. The Falls of Linville, are not far distant from the table, and though not at present a place to be visited by the softer, will repay one of the hardier sex, for the fatigue of finding his way by a rough road over the ridges, to Linville Cove—of clambering the yet rougher hills that still intervene between him and the object of his travels, and of wading the river two or three hundred yards for the purpose of reaching the finest point of view. It is perhaps the wildest and most picturesque scene in North Carolina, with a splendid description of which, if we had room, leisure, and the inclination, we might embellish this communication to the Register. But he is a churl that will insist upon plucking all the flowers that adorn his path, and not leave a pink or rose for those who are to come after him. Passing by the Old Fields of Toe, and the Forge, where iron little inferior to the best, if it be not absolutely the best made in the United States, is manufactured, he may reach the summit of the Roan by this route, over the top of the Yellow. His fare and accommodation will not however be of the best, and although the poet declares that

> A summer night in green-wood spent,
> Were but to-morrow's merriment,

we think a good house and comfortable bed very much to be preferred.

The other route is by the way of the Pleasant Gardens and Turkey Cove, or (if the Burke County Court will have the road above McKin-

ney's put in repair) over Linville Mountain to Cane Creek, where we will find himself in the Baker Settlement, amongst a kind and worthy people. From this place, if there be ladies in the company, they may ride without danger of much fatigue, quite to the top of the Roan—a distance of 4 or 5 miles.

It is most desirable to have a clear day for the excursion, and it is worth waiting for, if our visit happen to be made at a time when the mountains are wrapped in clouds. Such a condition of things is by no means improbable. The rain falling annually about the head of Toe River may be estimated at double of that descending upon the same area below the ridge and at some distance from it. It was part of our scheme to collect materials for giving greater precision and accuracy to the map of this part of the state, nor was it through a want of zeal or faithful labor (it requires very little of either knowledge or skill) that we failed; but during the whole term of our stay about the mountains, there were but two days that they had not clouds resting upon them, a large part of the time.

But even under such circumstances, there is no want of objects of attention. Often, especially in the morning, the mountains lift their head into a serene sky above a sea of mist and cloud that girdles their sides. They may be ascended then, if for on other object, for the sake of the prospect which awakened the slumbering fire in the bosom of Beattie, and inspired one of the finest passages in the Minstrel:—

"And oft the craggy cliff he loved to climb
When all in mist the world below was lost,
What dreadful pleasure! there to stand sublime,
Like shipwreck'd mariner on desert coast,
And view th' enormous waste of vapor, tost
In billows lengthening to the horizon round,
Now scoop'd in gulfs, with mountains now emboss'd,
And hear the voice of mirth and song rebound;
Flocks, herds, and water-falls along the hoar profound."

Or without going above the clouds, he may find in the streams below, an humbler but not less agreeable amusement, in the capture of the speckled trout with which they abound. It is a luxury to feel him bite: he takes hold with such earnestness, zeal and hearty good-will, and this luxury is exchanged for another not less alluring, when after having been prepared by the cunning hand of a comely 'hieland' maiden the biter is bitten in his turn. [See Doughty's Cabinet of Nat. Hist. vol. I. p. 145—9] Or, instead of the trout, he may catch the amiable quadruped with the many names that are associated with him (called in Yancy the Crocodile or Water Puppy) who is not found except in the tributaries of Ohio, and, we believe, is confined to the clear cool streams that flow down the western declivities of the Alleghanies—cook him and show the Yancy people that the dislike generally entertained for him is prejudice, and that he is in fact excellent eating.

The roughness of the sides and top of the Black Mountain is likely to prevent it being often ascended from motives of curiosity and pleasure. A route, very much better than that pursued by us, is not likely to be discovered, and that can be accomplished only on foot; and for between one and two miles, it is through thick laurels and along a bear trail. What these are, must be learned by experience, as description alone will not convey an accurate idea of them to the mind of a lowlander. The laurels are so closely set, and their strong branches so interwoven, that a path cannot be forced by pushing them aside; and the hunters have no method of advancing, when they happen to fall in with the worst of them, but that of crawling along their tops. The Bear, in passing up and down the mountain, finds it wisest to keep the ridges, and trampling down the young laurels as they spring up, breaking the limbs from the old ones and pushing them aside he forms at last a sort of burrow above ground, through this bed of vegetation, along which he passes without difficulty. This is a bear trail; which though an excellent kind of turnpike probably in the view of the animal that formed it, is much less highly approved by the two-legged animal who tries it after him, and who submits with some degree of shame and indignation to the fashion of the place, in regard to the attitude he assumes as he travels up and down the mountains. From such an expedition, he is likely to return thoroughly fatigued at night. The top is covered with the balsam fir, from the dark and sombre shade of whose foliage it doubtless received the name of the Black Mountain. The growth of the tree is such on these high summits, that it is easy to climb to the top and taking hold of the highest branch look abroad upon the prospect. At the time of our visit, the mountain was enveloped in mist, which prevented our seeing more than a couple of hundred yards, and we were so uncomfortable from cold, that some of the company urged a return with the least possible delay, and this when it was clear weather, at a small distance below the ridge and the Thermometer at 80.

The temperature of a few wells and springs is subjoined. The finest iced water is a vapid drink, in comparison with the pure element that gushes from the sides of these Western Mountains.

Wells on Chapel-Hill, Oct. 17.		59
Wells in Lincolnton, July 6,		61
	Morganton, July 16.	58
Spring	Keller's Field,	50
"	Daniel Moore's Globe Settlements,	57
"	James Riddle's,	54
"	Near the top of the Grandfather,	53
"	Ascent of the Roan,	52
"	North side of the Black Mountain,	50
"	Another, same mountain,	48

N.

MANURING WITH LEAVES AND MUD COMPOST.

To the Editor of the Farmers' Register.

Craven county, N. C.
April 10th, 1836.

There is a gentleman residing in an adjoining county who inherited a patrimonial estate consisting of a worn-out farm, and some few accessories to its cultivation. He married and went to work on it, but it took but few crops to show him that the product would not support his increasing family. Many a sleepless night did he pass in pondering over his circumstances. After much deliberation, however, he resolved, like many others in the same situation, on emigration, and visited the south to make arrangements for that purpose.

He travelled to some extent, but returned perfectly disappointed with the country. He went "hard at it" again for another year, and saw nothing but bankruptcy staring him in the face. Every year found his debts accumulating. He had been raised to agricultural pursuits, and to agricultural pursuits alone. After a great deal of perplexity however, in resolving and re-resolving, he finally concluded to try and improve his soil in some way or other: but how should he do it, was to him an important question. It being then a thoroughly new thing in that part of the country, he hardly knew in what way to begin. The practice then was (and is too much so now) to get all you can from the soil, and return nothing to it. After much reflection on the subject, he commenced hauling pine leaves and other litter into his cow and horse lots, and as soon as that was tolerably trampled, he gave it a good coat of mud from an adjoining branch, and continued alternate layers of litter and mud, till it got a foot or so thick. He then piled it up in large heaps, to let it undergo a fermentation. In the spring, he hauled it out and manured his corn, some in the hill, and some broadcast. His succeeding crop bid him strenuously to proceed. As soon as he had laid by his corn, he went at it again with increased diligence. His anticipations of futurity, which were before so painful, were now loaded with pleasure. He saw a way of driving that grim monster, poverty, from his path.

The individual who is the subject of this article, has continued to proceed in this way for the last twelve or fifteen years, and he is now in prosperous circumstances. His crops amply repay his labors. His neighbors who at first laughed at him for throwing away his time, are now following in his footsteps, and there is a prospect of the whole neighborhood's being greatly improved, by the previous necessities of this one individual.

W.

EXPLANATION AND CORRECTION.

To the Editor of the Farmers' Register.

Cambridge, E. S., Md.
March 31, 1836.

* * * * * * * *

In your March No. I discovered that you had done me the honor to insert the two letters I had written you respecting the 2d edition of your "Essay on Calcareous Manures," which you had politely presented to me—and I regretted to discover in the last paragraph of the second letter, a typographical error which gives an unfriendly aspect to the spirit and intention of the communications, and very different, I assure you, from the motive which dictated them. I designed, in that paragraph, to apologize, for the *freedom*, or, as I termed it, "the frankness" of my remarks, and your printer has rendered it "harshness." Now, though I am not sensible of any harsh sentiment in the letters, yet it would be inferred, from the printing, that I had designed and believed there was, which is remote, in truth from the fact. In the same paragraph, "except" is put in place of "accept"—which, by the by, is too obvious an error to be regarded. In reference to your comment on my exception to your nomenclature, (as to the term "calcareous earth"—) I must confess that I had not observed or referred to your note, (in the Appendix) containing the explanation of your difficulty in the selection of a term, which would best suit your purpose. I had sufficiently gratified myself with the more essential matters discussed in the Essay.

JOSEPH E. MUSE.

[The last fault named above, was of course the printer's, as the meaning, and, therefore, the proper word, was obvious: but the substitution of "harshness" for "frankness" was owing to the difficulty of reading the word, and the context, in that case, did not serve (as in general) to determine the intention of an illegible word. But in either case, we repeat the assurance formerly given to our respected correspondent, that no apology was necessary for his strictures—nor would have been necessary, even if they had gone to such extent as to deserve the word "harshness;" and it is only because, he deems this explanation to our readers to be necessary, and to comply with his request on that account, that this extract is here inserted—and not because we think that any thing like apology was required for the remarks of our correspondent, either as they were in fact designed, or as mis-read and therefore mis-printed.]

ON FIRING TOBACCO THROUGH FLUES. THE BENEFIT OF CUTTING WHEN FULLY RIPE.

To the Editor of the Farmers' Register.

Goochland, April 16, 1836.

Believing a portion of our time cannot be more profitably employed than in the acquisition and dissemination of truth, permit me through the medium of your very valuable and interesting paper, to offer to the public, a few suggestions in support of a mode of curing tobacco (viz: by flues,) which I deem superior to any other with which I am acquainted. I do this the more cheerfuly, as it will have a tendency to divert my mind from subjects of minor importance, and from the conviction that it will not prove unacceptable to those of your readers whose interests it may be to secure their crops (when housed.) from the destroying flames. Perhaps it may occupy an improper position in my mind in believing this plan to be something new; if not, its age will only bestow on it additional credit; and I hope my imperfect description of the construction and effects, may have a tendency to elicit from some of your able and ready writers a more correct account of construction and utility, as developed by their successful experiments.

I will now proceed to describe the formation of the flues, and then say a few words on the advantages they possess, (over the common way of curing,) as related by Mr. Thomas B. Gay, from whom they originated. The fire-place should be made about twelve feet from the outside of the house: six feet long three deep, and eighteen inches wide. The flue from the fire-place through the house should be eighteen inches deep, and twelve wide at the bottom, drawn in at top, so that one brick will cover it. The fire-place and the part of the flue outside the house, should be arched

with brick, (mortar would be equally good, perhaps preferable,) and covered over with dirt about a foot thick, to prevent the escaping of the heated air, and injury from weather. There should be two fire-places to a twenty foot house, which should be walled with stone; the flues of which, should extend around the house about four feet distant therefrom—meeting on the opposite side. After getting three feet in the house, I make holes on each side of the flues, three inches square, eighteen inches apart, through which the heated air will escape, and being done horizontally, will be regularly diffused through the house. These holes should not be opposite each other, as that will prevent in some degree, the heat from escaping regularly.

The bottom log or sill of the house, should be at least two feet above the top of the flues, to insure a non-communication of fire: that being secure, very little fear of fire need be apprehended from any other source. The space from the flue to the log should be filled with mud. A house intended for flues (for obvious reasons,) should be set on a hill-side.

I would now observe that Mr. Gay commenced the use of these flues in 1824, without a knowledge of their previous existence; and from actual and repeated experiments, considers them perfectly safe from fire. Sparks are not very common objects of perception in the house: and I believe a torch is necessary to set tobacco on fire. That heat and smoke cannot exist together, (when coming in immediate contact,) has been most happily illustrated by the fact that the latter becomes very nearly extinct in passing the flues before entering the house.

I saw some of Mr. G's tobacco a few days since, and from its fine appearance and flavor, concluded that it had not been subjected to the deleterious effects of smoke. That the time and labor required in attendence, is less than in the common mode cannot be doubted—when I say that one hand can, with ease, keep up the heat of three or four houses, were they half a mile apart—his only care being, to replenish the fire-places with fuel. I would here remark, that tobacco should never be suffered to pass through a sweat while undergoing the process of *yellowing;* and this should occupy a day or two. I believe the primary cause of good tobacco curing of a dark color, arises from the absence of the requisite quantum of air at that crisis. It would therefore be prudent to remedy the evil by removing the cause, which should be done [by making openings] about five or six feet above the base of the house. Perhaps openings in other parts of the house would be equally effectual.

This subject seems to merit some additional remarks: but feeling a disposition to advert to the practice of another very intelligent and practical farmer, the imitation of which, I think would be attended with profit to the fraternity generally, must desist. In consequence of a great press of business in September 1834, (which is common to all industrious planters at that juncture,) his tobacco enjoyed the privilege of remaining in the field about two weeks later than was intended. Having by this time built a house and completed other requisite operations, the weather admonishing him that frost was approaching, he went into his field and uttering the injunction to "cut boys, and spare not," which was rigidly enforced, very few plants escaped the attack. It was in every respect ripe for the knife. He realized the excellent price of $19 per cwt. for his best, and $10 for his *lugs;* while the maximum price of that of his neighbors, produced on equally good land, did not exceed $9 or $10. It is a notorious fact that many planters cut their tobacco through fear of a frost, when it is improving more rapidly than at any former period. I think this course unwise, believing he would be a gainer by suffering it to stand till thoroughly ripe; even were he to lose one crop entire out of six or seven. Judging from past experience, I think no planter should make more than two, or at most three cuttings under ordinary circumstances. In support of this practice, I would only add a few remarks; though it would justify many. In the first place, its quality and quantity is greatly enhanced. This is a very direct and effectual method to increase the price as shown above. The open space caused from one large cutting supersedes the necessity of carrying the tobacco to the edge of the field, as a cart may pass and receive its load, without the remainder sustaining much injury. It is obvious that time and labor will be economized. It enables the planter to fill a house, or houses, from a single cutting. The advantages derivable from this circumstance are numerous and apparent to every curer of tobacco, and need not a comment from me.

I will mention one more advantage attending this plan—and leave others to be supplied by the reader. Tobacco cures of a much better color after the middle of September, than earlier. I beg leave to make assertions without proof, as the methods recommended, will, (when tested) be found correct. To obviate the necessity of cutting the plants topped first, sooner than those subsequently topped, I would recommend that they be crowned with a greater number of leaves. "Solid and practical wisdom consist, in pursuing valuable ends by the most appropriate means."

ROBERT D. KEY.

For the Farmers' Register.

THE WEST.

Glencoe, Alabama,
April 4, 1836.

Agriculture.

Agriculture in new countries is carried on in an exhausting and improvident manner. To an inhabitant of an old state, where economy is better known, it is quite shocking to observe the prodigal waste of timber consumed in clearing a western plantation. Entire primitive forests, girdled, wither, and rot away—food for the woodpecker species which is very numerous in this country—or are at once felled with the axe, and burned in heaps. Thus, millions of sturdy oaks and giant hickories through whose tops the winds of many winters have whistled, are transformed in a brief hour to thin blue smoke, and mere volatile gas.

The land once cleared, is exhausted by an uninterrupted succession of crops—until, the product yearly growing less and less, the proprietor becomes dissatisfied, and sells out to some less opulent or less avaricious neighbor, and removes to some new elysium in the west.

There is nothing new under the sun:—the same

process has been going on in all the southern states. The greedy havock of a wasteful, merciless system of agriculture, has tended to impoverish all the states bordering on the Atlantic—none of the soil retains its original fertility, except the deep alluvial banks of the rivers, and I suppose even they begin to feel the effects of wear and tear.

The consequence of all this is two-fold: first—necessity has driven a considerable portion of the people of these state to emigrate westward—and secondly—a re-action has ensued in the system of agriculture; and means are taken to renovate the constitution of a deteriorated soil. Marl and other modifications of lime are brought into use—science and the press lend their aid, and at length "the wilderness blossoms like the rose."

Emigration.

From Jamestown westward, the successive surges of emigration have been each subjected to the same train of influences, and the same effects have repeatedly resulted. The perils of a pioneer life make the early settler brave—exposure makes him hardy—and labor makes him robust. These dangers, difficulties and fatigues, however, while they taught the necessary virtues of patience and fortitude, to those who had emigrated, would have deterred others from following in their wake—had not their stern aspect been relieved by the many pleasing features and singular advantages of a new country—the charm of adventure, the fresh and lovely form of nature, the fertility of a virgin soil, and perhaps the escape from recollections which distance alone could efface.

The life of Boone—the pioneer of pioneers—is an example of the pains and the pleasures, the lights and the shadows of emigration.

The obstacles however which did not stop, tended much to repress the tide of emigration; had it been otherwise—had the west held out enticements alone—the Atlantic states would have been almost emptied of their population, which would have been precipitated upon the west.

The current of emigration, at first attenuated—gradually widens, as the obstacles to its course, grow less. In the meanwhile the population of the older states increases, until they can afford to part with a portion of their inhabitants. This is however the case, not so much in the states south of Mason and Dixon's line, as in the north. The peopling of the valley of the Mississippi is the grand moral phenomenon of modern times. Like scenes may have been witnessed, when the progeny of Noah peopled the eastern hemisphere: but we may doubt whether ever, in any age, a tract of country so vast, so productive, and watered by so many navigable streams, has been filled up in so short a time with a population so civilized, as that of the basin of the Mississippi.

C. CAMPBELL.

CORN CULTURE IN BOTETOURT.

To the Editor of the Farmers' Register.

Peyton Hall, Botetourt,
April 17, 1836.

* * * * *

Instead of closing my letter with this matter of business, I will submit to you and your intelligent subscribers, as far as the limits of this sheet will allow, the outlines of my mode of culture in several crops. It is not my intention to give the reins to my fancy, that your readers may be amused with its visionary creations; much less is it my design to insult their good sense, as is too often done, by tediously explaining to them, as recent discoveries and untried experiments, systems and modes of culture, familiar to every intelligent agriculturalist since the days of Columella. My object is to give you, in a plain and unambitious style, the mode of farming pursued by myself, that it may be scrutinized by others, compared with their own, and its faults detected and made known. This manner of giving individual systems, and the results of individual experience, seems to be the only true means of advancing the science of agriculture, and placing it on a solid foundation. Without dwelling longer in preliminary observations, I will proceed to give you in the first place my mode of managing the corn crops. And as a further guard against every thing merely speculative—I will give you a transcript from my farm-book, of the process pursued by me, in its cultivation last year.

I had about 70 acres in corn, not three of which had a dressing of manure, and all old upland, any 20 acres of which taken together, would have been, as to natural soil or improved condition, a fair average of the whole farm. The larger portion was in wheat the preceding year, 9 acres had been in clover three years, and suffered to fall and rot for the last two; and 10 had been in corn the year before. The whole was fallowed in the fall and winter, with the Davis' plough. In the spring it was cross-ploughed with "bull-tongues," a species of plough between the shovel and coulter, uniting most of the advantages, and free from the objections of both. I then levelled it with large harrows weighted, and drawn by two oxen. The season for planting having by this time arrived, we listed it with shovel ploughs, having a board nailed in front to widen the furrows; in which furrows, coulters followed immediately after the shovels. Upon hill-sides I planted in horizontal drills five feet apart, with the corn dropped at intervals of from 15 to 18 inches in the row. When the land was level or greatly undulating, it was checked four feet each way. The land being thus prepared, we selected our seed corn with care, and steeped it for 24 hours in a liquor composed of drippings from rich manure, with plaster, salt and soot, in large quantities. As the *droppers* required it, we took it from the liquor in its wet and swollen condition, and rolled it in plaster. The checked corn was covered by foot, with the exception of a few rugged places, and the drilled with the five toothed cultivators. So soon as the corn became sufficiently visible to mark the rows, we commenced working it with the bull-tongues, and continued without cessation: so that no portion of the crop was suffered to remain more than eight days unworked, until it was laid by. The only change in the cultivation, was about the time the change in the color of the wheat, began to admonish us of the near approach of harvest, when, we ran our cultivators, or scarifiers as they are called by some, over the whole; and left it perfectly smooth and free from weeds. The pressure of my tobacco prevented my blading or topping any, except a ve-

ry inconsiderable portion of the corn. The yield was upwards of 800 barrels, making an average of 12 barrels, or 60 bushels, to the acre. My manager measured an acre of the drilled corn upon a rough, but rich hill side, and it shucked out nearly 16 barrels, (78½ bushels) of shelled corn. The season was generally speaking favorable.

From this unadorned skeleton of my mode of culture, it will be observed, that my first great object is, to prepare the land thoroughly, before planting. 2d. To have my seed stimulated in their early growth, by the most powerful and concentrated manures. 3d. To keep the ground as I started with it, in perfect tilth, and entirely clean. 4th. To use such implements as cut very deep, with little labor to the horse; which being necessarily narrow, will pulverize the soil, and make it more permeable to heat and moisture: a circumstance to which the ingenious Tull perhaps attached too much consequence—but one which I am satisfied the opponents of his theory undervalue. Another object in using this narrow, deep cutting plough, is, that from the beginning it cuts off all the surface roots in the balks, and makes the corn strike deeper; and thus, renders it less liable to be affected by the vicissitudes in the seasons. I have observed that whenever corn is ploughed, after being neglected until the grass and weeds have sprung up, and especially when the working is followed by dry weather, it is invariably injured seriously. Sometimes it is fired so badly, as to cut off the crop by half what it would have been, had it been left to the weeds—and occasionally it produces almost a total failure. This, of course, arises from the corn being irregularly worked—and when worked, the surface merely scratched over. The roots are suffered to spread themselves uninterruptedly near the surface in the balks; and these being broken necessarily in the after working—the corn is thus deprived of its principal sources of moisture and nourishment, and suffers immediately. When I cease working at harvest, I never put a plough in afterwards; believing that the time has then arrived when the crop requires that its roots should be suffered to extend themselves *uninterruptedly* in every direction, in quest of food to support its increased size. During two short dry spells which we had last season, my corn continued to preserve a deep blackish green color, whilst that of my neighbors was a good deal injured.

I have thus in obedience to your appeal to your subscribers, contributed my mite of facts upon one branch of our agriculture. Should you excuse the negligent and hasty manner in which it is thrown together—and consider it of any value to your paper, you can publish it; and at some more leisure moment, I will extend my remarks so as to embrace the other crops cultivated by me.

Your obedient servant,

W. M. PEYTON.

"VIRGINIA CORN AND COB CRUSHER AND GRINDER." GENERAL REMARKS ON THE RECOMMENDATIONS OF NEW PATENT MACHINES.

A correspondent requests of us information respecting the above named machine, which is spoken of highly, but only in general terms, in a late number of the Farmer and Gardener. The maker's name is Jas. L. Baldwin, but his place of residence is not stated. Any particular information respecting the machine from a disinterested source, if likely to be useful to the public, will be thankfully received for this publication. If this notice should meet the eye of the patentee of the machine, he is requested to write to N. Herbemont, Esq. S. C., and state particularly its performance, price, &c.

We also request, for another correspondent, information (derived from experience,) of the best and cheapest corn-mill, to be worked by horse power, and on a scale suitable for the wants of a single large farm.

We use this occasion to say, that similar information, founded on sufficient experience, and sustained by the voluntary communications and signatures of disinterested and respectable individuals, will at all times be received and published in this journal, with pleasure. But we have discouraged such communications, and will continue to refuse to publish them, when they are not sustained by names of known respectability, and unless the object appears to be to serve the public, and not merely to help the sales of the owner of a patent right. Without such strict regulations, many of our pages would be filled with the certificates, (in form or substance,) of the superior advantages of new patents; and which we know, nine times in ten, even of those the most abundantly supported by certificates, prove to be of little worth—and often of none. Such "communications" would be, in fact, mere advertisements in disguise—differing from ordinary advertisements in these respects however, that they would not be paid for, and that from their position, and the editor's apparent sanction, they would have far more authority, and effect, than any advertisement in ordinary form—and the publication would thereby serve the more to aid deception, if the invention was indeed worthless.

Every one knows that the names of respectable individuals may be obtained in recommendation of a new machine, with as much ease as to a quack medicine—and that they are worth, in the general, as little in the one case as the other. On our advertising sheet, or covers, any such advertisements may be placed, on the responsibility of those, who sign and pay for the advertisements. But information respecting those or other machines or inventions, which appear in communications to the Farmers' Register, must stand on very different, and much higher authority. It is a matter for regret, that we have been enabled to publish so few communications on this subject. But it is far better that they should be too few than too many—as by a free admission to such advertisements in disguise, this journal would be made the channel of communicating to its readers ten times as many falsehoods as truths, respecting new patent machines and implements.

These remarks are, in part, a suitable introduction to the list and descriptions of new patents which follow, and which will be continued regularly hereafter, if the plan should be approved by our readers. The Journal of the Franklin Institute, to which we shall be indebted for these descriptions, contains monthly lists of all

the new patents issued from the Patent Office, and at as early date, as circumstances permit. The editor, Dr. Jones, who prepares these lists, and accompanies them with his comments, possesses great and peculiar facilities for the task--and therefore his opinions, as to the value of new inventions, deserve much respect. A large proportion of these patents are for inventions or alleged improvements of machines, or implements, designed to aid processes in agriculture, or domestic economy—and it is this class alone, that we shall extract for re-publication. By this means, a notice of every new invention will reach our readers, before a travelling agent offers it for sale, and the service rendered by the earlier information to farmers, will be of much more value, perhaps, in directing what to reject, than what to approve and purchase.

Extract from the Journal of the Franklin Institute for April 1835.

MONTHLY LIST OF PATENTS FOR IMPROVEMENTS IN MACHINES OR IMPLEMENTS, OR PROCESSES CONNECTED WITH AGRICULTURE OR, DOMESTIC ECONOMY.

[The whole number of patents issued in September 1835, (the last monthly list yet published,) amount to 67, of which the following 21 are of the class embraced by our plan for this and future monthly republications.]

For a *Lever Press;* Jonathan Payne, Russelville, Logan county, Kentucky, Sept. 9.

This lever press, it appears, has been the subject of an arbitration under the ninth section of the patent law of February, 1793, relating to interfering applications, which terminated in favor of the above named patentee. The construction of the press is pretty clearly made known in the specification, but no claim is there made to any part of it. It is intended for cotton, hay, tobacco, &c. &c. and is constructed as follows. A stout sill, from 30 to 50 feet in length, has, rising from the middle of it, two upright pieces of timber 10 feet high, which serve to sustain a lever, or beam, between them of the same length with the sill, and measuring 12 by 10 inches. A stout pin, sering as a fulcrum, passes through the upright cheek pieces, and through the beam. Either end of this beam may be drawn down by means of a rack and wheel work, the latter being sustained by the sill, and the former depending from the lever. A pinion, probably of 4 or 5 inches in diameter, turned by a winch, gears into a wheel of 7 feet diameter, having a pinion on its axle of 6 or 7 inches diameter, which acts upon the rack.

No directions are given for using this press, but as only one end of the beam can be employed at a time, the rack and gearing must at one end be used to raise,and at the other to depress the beam, between which and the sill the pressing must, necessarily, be effected.

For a *Churning and Washing Machine;* Thomas Ling, Winthrop, Kennebec county, Maine, September 9.

This is a swinging, or pendulum churn, which really has some novelty about, it and even in this fact alone, their is something cheering, as originality has long been a rare element in churns and washing machines.

The churn is a round tub suspended vertically within a frame, so that it can swing like a pendulum. A vertical shaft within the tub carries dashers, as it is the case in many other churns. To cause the dashers to operate, the shaft projects above the tub, and a string, or cord, passed once or twice round it, the two ends of the string being attached to opposite sides of the frame; on vibrating the tub, the string operates like a drill bow, as will be readily perceived. The claim is to "the modification and combination of the swing or pendulum churn and the dasher, for churning and washing."

For a machine for *Washing Clothes and Fulling Cloths;* Orrin D. Wade, China, Genesee county, New York, an alien who has resided two years in the United States, September 9.

The clothes are to be put into a box, or trough, through the lid of which there passes a row of upright shafts having flat blocks of wood on their lower ends, which blocks nearly touch each other. A row of horizontal levers, hung upon fulcra, and acted upon by lifters on a revolving cylinder, cause the shafts and their blocks to rise alternately, whilst springs above the levers force them down. This constitutes the whole apparatus, to which no claim is made.

For a machine for *Shelling Corn;* Elijah Morse, Knox county, Tennessee, September 9.

A roller of cast iron is to revolve horizontally, and upon it there are to be rows of teeth which pass betwen others on the frame. The feeding, as we suppose, is to be effected by placing the ears upon a concave, hinged cover; whence they are to roll, or be forced, against the revolving shaft; a winch occupies one end of this shaft, and a fly wheel the other. The description is very imperfect, and the drawing, although well executed, must certainly show the teeth of the machine. and some other parts, incorrectly. The claim is to "the application of the roller, and the general construction of the whole machine."

For the *Application of Hydraulic Cement, &c,;* Obadiah Parker, city of New York, September 9.

This is an *application patent,* like most of, or nearly all, those obtained for the use of cement. By an application patent, we mean one which might be taken for applying a plaster of some approved salve to the head, another being taken for applying it to shoulder, and others for all the various divisions and subdivisions of the superficies of the corporeal system. In the present instance are enumerated, "house and store cellars, vaults, small wood-cellars, vegetable cellars, cellars under side walks in cities, vaults in cemeteries, and vaults for milk, and garden cellars; the construction of walls, floors, aud roofs of buildings, and walls for enclosure; the construction of locks and guards for canals; the construction of sinks for kitchens, and other purposes;" "which has not been known or used." Indeed! there is novelty in this information, and this, we are well convinced, is the only place in which we shall find it, although eighteen pages are occupied by the specification of these applications, and the claim thereto.

For *Making Artificial Stone or Marble;* Obadiah Parker, city of New York, September 9.

Pulverized granite, or pulverized marble is to be brought to a proper consistence for moulding into the required form, in combination with water lime. This constitutes the *inventian.*

For the *Formation of Artificial Stone and Marble for Architectural Purposes;* Obadiah Parker, city of New York, September 9.

We have again about a dozen pages devoted to the mode of forming various ornamental and useful articles, pavements, &c. &c. by modes analogous to those described in the preceding specifications, and having consequently, the same claim to novelty, or rather to antiquity. Should the patentee think himself aggrieved by the foregoing remarks, a thing which we do not anticipate, we will offer him a reference to a gentleman in New York, who can tell him much more about the combinations of water lime, and the formation of artificial stone, than he now knows; and will give him ample proof that our animadversions, or rather intimations, are founded in perfect truth.

For a *Water Wheel;* Jehiel W. Dart, and Stephen Wood, Truxton, Cortland county, New York, Septembar 9.

This is a kind of re-action apparatus, in which two wheels differently constructed are to be placed one close above the other on the same vertical shaft; the first of these wheels has four floats which revolve in a circular drum, through the side of which the water enters tangentically to the circle, and strikes the floats; after performing its labor there, it escapes through a centre hole in a horizontal partition, and enters the ordinary reaction wheel, passing through its curved channels, and escaping at its periphery.

The claim is to "the increase of power which is obtained in the above arrangement of the central discharges, or whirlpool wheel, and the reaction wheel." This is rather an inverted claim, being to the end, instead of to the means; but this in the present case is a thing of little consequence.

For an improvement in the *Coffee and Corn Mill;* Elijah Morse, and Caleb Putnam, Knoxville, Tennessee, September 9.

Nominal *improvements* are so easily made that it requires no talent whatever to be author of them, and such is that which forms the subject of the present patent. The mill in which the pretended improvement is made, is the common cast iron mill with a conical shell and nut, in its unaltered state, excepting only that the patentees "claim as their own invention, and not previously known in the above machine, that the furrows in their mill run straight through, and not spiral, as in all other mills." It does not require two grains of mechanical knowledge to enable a person to decide that this change deteriorates instead of improves the mill: nor is it necessary to have dipped deeply into the logic of Aristotle, or of Watts, to arrive at the conclusion that it requires one and one to make two, yet in the case before us we are to admit that the inventive genius of two individuals might be put into requisition to devise one set of straight furrows.

For *Supplying and Regulating the Draught of Air to Fire Places;* Robert Mayo, city of Washington, September 9.

Pipes, or tubes, of tin, or other material, which may be from one and a half to three inches in diameter, are to lead from the lower part of a building, up the outer walls, their upper ends opening under the grate or fire place. Such pipes may be added to buildings already erected; but in the erection of new ones it is proposed to form these ascending air channels within the thickness of the walls, their lower ends opening to the external air, and their inner to the fire place. Valves to regulate the quantity of air admitted, may be constructed of any suitable form.

The claims made are "*First.* The arrangement, combination of parts, and adaptation of the air pipes, or tubes, to ascend the outer walls or chimneys of buildings, or apartments, and penetrate the same, contiguous to fire places. *Second.* I claim the construction of air channels or flues in the masonry of chimneys, or the walls of buildings, to ascend from a lower stratum of atmosphere and terminate near to, or in, the fire places."

With the exception of extending the tubes to the lower part of a building, it will not be pretended that there is any novelty in this contrivance, the practice of admitting air from without, to feed fires, being old and common; but even the ascending tubes themselves are not new, they having been frequently recommended and applied to the supply of fires for the purpose of ventilating cellars, and other lower apartments; it may be said, however, in the present case, that this is not their object, that object being merely the supply of the fire; without inquiring into the validity of this allegation, it is proper to ask what are the advantages of these descending pipes, and we believe that this is a question which cannot be satisfactorily answered. The patentee says that we shall "thereby create a constant current through the tube, or pipe, of a strength proportionate to the height of the pipe, or the greater weight of the medium of atmosphere at the lower extremity, or inlet, than that at its upper extremity, or outlet; which takes place upon the same principle of pneumatic or atmospheric pressure, which forces water in a tube, or well, to rise to the height indicated by the known weight of the atmosphere: and this principle is equally applicable, of course, to the air channels, or flues, constructed in the masonry."

The foregoing may pass with the illiterate for good reasoning, but it is altogether false and unfounded. The pressure at the opening of the tube within the room will not be altered by the extra height of the atmosphere above the lower opening, the column within the tube being a perfect balance to this; the whole trouble and expense of the tubes may, therefore, be saved, together with the cost of a patent right to do that which is in itself altogether useless.

For a *Washing Machine;* James Lombard, Readfield, Kennebec county Maine, September 9.

The trough of this machine is a concave semi-cylinder, closed at the ends, and fluted along the semicircular part. The *rubber*, which is to act upon the clothes, is also a semi-cylinder, which passes into the trough, and is suspended by an axis at, or near, its centre. This rubber is either fluted, or covered with fluted rollers, passing from

end to end on its curved surface. It is so hung, by means of a strap, or chain, as that it may recede from the trough, when too great a quantity of clothes may be between them, and also to admit of its continued pressure upon them. The rubber is to be made to vibrate by means of a handle. The claims are to "the form and application of the rubber, or interior cylinder—the mode of suspending and operating the rubber, and the application of the strap, or chain, whereby the pressure is regulated, and the rubber allowed to yield."

For a *Machine for Breaking and Cultivating Sward Ground;* Guy Gray, Industry, Somerset county, Maine, September 18.

A square frame is made to contain a roller, like that used for rolling ground, and a tongue is attached to the frame to draw it by. The roller, as described, is four feet long, and is set with teeth in twelve rows, containing, alternately, five and six in a row; the teeth, which are pointed, are seven inches long, but curved so as not to project more than six inches from the roller. There are teeth, also, on the back rail of the frame, so set as to allow the roller to pass between them. The patentee says, that when this is "drawn over the closest sward land, it breaks it more thoroughly than any other machine known to him, so that the ground may be afterwards ploughed with less than half the strength of team otherwise required, whilst it is left in a much better state for cultivation."

There is not any claim made; the whole must, therefore, be considered as new, or the patent cannot be sustained.

For a *Plough for Cultivating Corn and Potatoes;* Peter Stahl, and John Diffenbacher, Turbut township, Northumberland county, Pennsylvania, September 18.

This instrument is made in the form of what is commonly called a cultivator, and is furnished with six shares, affixed to standards twenty inches in length, for the purpose of mounting the beams high up above the ground. For the particular form of the shares, the model is, incorrectly, referred to. The following is the claim.

"The shares, or mould-boards, which are each cast in one piece, and forming a coulter, share, and mould-board. The high standards, which carry the plough beams so far above the corn, or potatoes, as not to break it down so long as it needs cultivating. The placing these in such a manner as to plough, or cultivate, both sides of a single row of corn, or potatoes, at one and the same time of going over the same."

For a *Machine for Planting Cotton;* Robert S. Goodman, Ballsville, Powhatan county, Virginia, September 18.

This is one of those classes of machines, the individuals of which can scarcely fail of exhibiting a strong resemblance to each other. They run upon wheels, which are fixed on a revolving shaft, or axle; they carry a hopper, into which the seed is put, and which falls through an aperture regulated by the revolving axle. There is a share in front of the machine, to open a furrow, and a scraper behind, to cover the seed. These are general elements, which are common to all, and are common property; what is left, therefore, to ingenuity, or fancy, is to devise those minor arrangements upon whtch the more or less perfect action of the machine is dependent, and which have usually too little of originality, or skill, to render it worth while to follow them out, and such we think the case in the present instance. The claims are to "the manner of using the wheel at the perforation at the bottom of the hopper. The revolving shaft, with the pin, or pins, and conductors, attached to it, to be set in motion in the manner described."

For a *Machine for shelling Corn;* James S. Harris, Poultney, Rutland county, Vermont, September 18.

We apprehend that this will prove to be one of the least valuable of all the corn shelling machines, from its being inconvenient and laborious to operate with, whilst it will not be recommended by its efficiency. It consists of a fixed rubbing board, set with teeth, or otherwise furnished with projecting points, and a movable rubbing board, to be worked up and down by a lever, which is moved by the right, whilst the feeding is to be performed by the left hand. No other provisions are spoken of, nor is any claim made.

For a *Cradle and Mowing Machine;* Edward Badlam, Jr., Chester, Windsor county, Vermont, September 18.

By means of a face cog wheel on the inside of one of the wheels upon which the machine runs, motion is given to a horizontal shaft, the opposite end of which gears into a bevilled pinion on a vertical shaft, which sustains scythes, revolving horizontally. Small wheels on the underside of the fixtures of these scythes, run upon the ground, and serve to raise them over knolls, whilst springs above them keep them in their places; the grass, or grains is received upon fingers, which conduct to a rack.

The claim is to "the springs, with the fixtures for enabling the scythes to pass over small knolls; the fingers and the rack, for the purpose of catching and laying the grass and grain, after being cut by the scythes."

For machinery for *Cutting and Collecting the Heads of Grain, and Grasses;* Jacob Peck, and Daniel Ashmore, Jefferson county, Tennessee, September 18.

The machine is intended to be driven forward like a wheelbarrow, when grass seeds are to be collected; for the heads of grain, horses are to be employed to *drive* the apparatus, which, in its general form, resembles a cart. The machine must be mounted upon wheels of such height as will suit the grain, or grass, the seeds of which are to be collected. The heads, as the machine advances, are to be received between a row of lancet shaped knives, flat on the top, and bevilled to a sharp edge from below. Fingers of wood, or of metal, may also project forward, the better to guide the heads to the knives. Above the knives there is a kind of revolving reel, set in motion by bands and whirls, connected with the running wheels of the carriage; this reel, or open cylinder, carries knives, which come nearly into contact with the row of fixed knives before spoken of, which cut off the heads of the grain, or grass. There are various appendages to, and modifications of, this machine, described in the specification, which we cannot wait to notice.

"What we claim as our invention, are the lanceolate knives, or, in the stead of them, the series of fingers, with other knives, to steady the grain in cutting—the revolving wheel, with strikers, knives, and canvass—the collecting hand with its wheels, crank, lever, rest, and adjustment—the pulleys and band to drive the revolving wheel—the propelling power behind—the principle of the governor of the rudder to give direcrection to the machine; and the application of the whole to the use and purpose of cutting and collecting the heads of grain, leaving the straw on the ground, and in like manner saving clover and other grass seed."

We believe that it will be proved upon investigation that this claim embraces too many particulars, and thus includes things which have been before well known and employed. Rows of lanceolate knives are not new; the propelling from behind, in grass and grain machines is not new; the driving a wheel by a band and whirls is not by any means a fit subject for a claim; yet there is certainly enough in the machines upon which to have procured a valid patent.

For *Cleansing Clover and other Grass Seeds;* Hiram Holt, Weld, Oxford county, Maine, September 27.

A cylinder, which may be two feet long, and the same in diameter, is to be covered with sheet iron, pierced so as to constitute a grater. Two concave shells, with like surfaces, are to be placed one on each side of this cylinder, leaving an opening at top for feeding, and at bottom for the escape of the seed. The cylinder, whose axis is horizontal, is to be made to vibrate backward and forward, to rub out the seed. The concaves are adjustable by screws. The claim is to this particular action of the cylinder, furnished with a concave on each side.

For an improvement in the *Grist Mill;* Owen Moses, Malone, Franklin county, New York, September 26.

The stones in this mill are to run vertically, and are both of them to revolve, but in opposite directions. The shaft of one stone is to be a hollow tube, through which that of the other passes, and a horizontal crown wheel is to mash into wheels on each of these shafts. The feeding is to be through the eye of one of the stones. There is no claim, and if it is supposed that the revolving of both stones, or the mode of gearing to effect this, is new, a little inquiry would manifest the erroneousness of such an opinion.

For a *Washing Machine;* John J. and Ebenezer C. Milliken, Winthrop, Kennebec county, Maine, September 26.

A trough is to be made in which there are to be two sets of vibrating stocks, of the ordinary form; a double crank shaft, the cranks at right angles with each other, is to work the levers by which the stocks are suspended; the cranks pass through slots in these levers, and are furnished with friction rollers, thus dispensing with pit-men, but by a much worse contrivance.

Claim.—"The application of a crank directly to the arms of the stock, in such a manner that one stock only shall press at a time. The application of friction-rollers to the crank, as above described, &c."

For a machine for *Shaving Shingles and Staves;* William H. Wilkinson, Wayne, Warren county, Ohio, September 26.

The articles to be shaved are to be forced over irons, on the face of a bench. Two vertical wheels, acted upon in a way described, and shown in the drawing, serve to carry the articles over the irons. There is nothing in the machine worthy of special notice. The claim is to "the arrangement of the wheels acting upon the driver."

For a *Machine for Dressing Hoops;* B. Kimball, A. Pevey, and F. Spalding, Petersborough, Hillsborough county, New Hampshire, September 18.

A wheel furnished with cutters on its face, near to its periphery, is made to revolve by means of a mandrel, like that of a lathe. A gauge stands in front of the cutters, having a roller, against which the outside of the split bears; this gauge is capable of being made to recede, by means of a lever, so as to allow the necessary increase of thickness in case of knots, &c. The following is the claim. After stating the various modes of arrangement which may be adopted, the patentees say: "We do not, therefore, claim the individual parts of this machine, as they have all been used under other combinations, and for various other purposes; but what we do claim as our invention, is the construction of an instrument for dressing hoops, made and operating, substantially, in the manner herein set forth; having a revolving cutter wheel, a shifting gauge, and the auxiliary appendages which give to it that character by which it is distinguished from other machines for the same purpose."

This machine has, we are informed, been found of very great value in its application to the purpose for which is was constructed.

From the Genesee Farmer.

ROLLING SEED BEDS.

Nothing protects young turnips, cabbages, and other cruciferous plants, so effectually from the depredations of the fly, as the operation of *rolling.* For when the surface of the ground is thus rendered smooth, the insects are deprived of a lodging place under the clods of earth, and disperse. This effect may be observed in turnip fields;—where the soil is finely pulverized, and the surface consequently left smooth, the crop is generally little injured, but where the surface is cloddy, it is often almost destroyed. But as rolling can only be done to advantage on light, or else on tolerably dry ground, where the soil is heavy and moist it cannot be resorted to; and as it is not always, when practiced, completely effectual in repelling these insects, it is commonly advisable to provide the additional remedy of air slaked lime, which should be at hand, to sprinkle over the plants whenever the fly may appear.

From the Genesee Farmer.

STINGLESS BEES.

We have seen in some late journal, an extract from Loudon's Gardener's Magazine, in which, speaking of the bee of New Holland, he says—"The native bee is without a sting, and not much

larger than a common house fly. It produces abundance of honey and wax, but has not yet been subjected to cultivation; and from its small size, and building on high trees, probably never will be so."

A late traveller in Mexico has given an interesting account of the native Mexican bee, which like the New Holland one is stingless, but has been completely domesticated, and forms an important addition to the means of subsistence and comfort of the inhabitants, Indians as well as Spaniards. The Mexican, in appearance much resembles the wild bee termed the upholsterer or leaf-cutter bee, the one that commits such ravages on the leaves of the rose bush while making preparation for depositing its eggs in the summer, except that it is rather smaller. The natives in the interior manufacture their hives from clay, in the shape of large earthen jars, and nothing is more common than to see a number of these hives placed on a shelf under the projecting eaves, and over the door of the Indian cottages, where they are half buried under climbing and fragrant blossoming vines, the bees perfectly harmless, and their rich stores ever ready at command. Whether the Mexican bee could be brought to endure our northern winters may be doubted, but that it would prosper in any of our southern states cannot reasonably be questioned, and we have often regretted that no attempt has been made to naturalize it in that section of the United States. Once introduced, it would rapidly spread; and like other animals and plants, the natives of a warmer climate may gradually become capable of enduring ours, and thus eventually supersede the useful, industrious, but sometimes dangerous domestic bee of northern latitudes.

G.

SOME OF THE EFECTS OF WEST INDIAN EMANCIPATION, AS STATED BY THE FRIENDS OF THAT MEASURE.

The following extracts form a small portion of a long and interesting article in the last London Quarterly Review, on the the "Foreign Slave Trade." The reasoning and the admissions are the more worthy of notice, as proceeding from a writer who (in the essential part,) approves of the recent and important measure of abolishing slavery in the British West Indies—and also, for being presented in a work of such high authority as the Quarterly Review. The results already found, in the short course of this great experiment, and still more the results anticipated by the reviewer, are such as any intelligent opposer of the abolition of slavery might have urged. But views from such a source would have been suspicious—and could not have compared, as authority, with these *precious confessions*. We wish to call the attention of our readers—*northern* as well as *southern*—to the following opinions, which will be found in other words in the extracts below, and some of which (especially on the probable extension of the African slave trade,) are enforced at length in the omitted parts of the review. These opinions are—

1st. That the abolition of slavery in the British West Indies has served, and still more *will* serve, greatly to increase the profits, and of course the prices, of slaves elsewhere—and, in consequence, will tend to extend the African slave trade, wherever that trade is permitted to exist.

2nd. That the payment of wages (though at rates much higher than their former cost of purchase and maintenance) will *not* induce the emancipated slaves to furnish any thing like the former amount of labor.

3rd. That a large proportion of the sugar (or other) land will be thrown out of cultivation, owing to the increased expense of tillage, and the diminution of laboring force.

4th. That the occurrence of insurrections of slaves, and their consequences, where slavery continues, is counted on as one of the compensations to British interests, for the disadvantages sustained from emancipation in the British colonies.

The last named argument, though (for good reasons) touched but slightly and tenderly by the English writer, deserves the full consideration of the people of this country. It is unquestionably true, that, in this respect, the commercial interest of Britain, (putting aside the groundless but not less operative feelings of commercial and political jealousy,) will henceforth concur in action with the movements of the pretended philanthopists and fanatical abolitionists, of both England and the United States. If the leading and most active abolitionists in our northern states are not actually hired to work for the gain of British employers, they well deserve to be paid the wages for such service: and there will be no lack of such efforts, prompted and sustained from abroad, so long as the most selfish and base interests, are to be best subserved by words and acts which go forth in the guise of pure morality, religion, and disinterested love for the human race. They who rob and murder, professedly in the name of virtue and religion, and for the glory of God,are an hundred fold more dangerous than ordinary villains who pretend to no better motive than the love of gain; and far more are their powers for mischief increased, when, in addition, they believe (as most of our anti-slavery fanatics do,) in the truth of their pretensions, and the holiness of their purposes and acts. From our slaves, of themselves, and from any political effects of the institution of slavery, as it exists in the South, we have *nothing* to fear—(the throats and the purses of the property-holders of New York are in much more danger from their mobs of *free men* and the spreading of agrarianism:) but the South, *and the Union*, have every thing to fear (and danger far greater than any from servile insurrections,) from the restless, mad, and *sustained* action of the northern abolitionists.

From the London Quarterly Review.

We have already had occasion to observe how largely the slave-market has, of late years, thriven, under the expectation of the foreign planters, that the relaxation and discontinuance of slave-labor in the British colonies must be followed by a diminution of British production, and by a consequently increased vent for the produce of the

foreign plantations. These expectations (on the strength whereof we understand that the prices of slaves in Puerto Rico and the southern United States have already risen between 25 and 30 per cent.) have proceeded upon the very great difference between the cost of producing sugar by free and by slave-labor. In some parts of Guiana, St. Vincent's, Trinidad, Mauritius, and Jamaica, the prime cost may probably be low enough, by reason of the soil's fertility, the facilities of carriage, and other local advantages, to promise a continuance of the sugar-crops (notwithstanding the additional cost of free-labor), at a price not too high to find some purchasers; but on all the secondary class of estates, the cost of production, under the added disadvantage of free labor, must henceforth (unless relief can be given in some essential point, such as that of the restrictions on West Indian intercourse) be too heavy to be remunerated at any price which, under the present duty, the consumers, could permanently pay. Nay, even granting the fullest relief from restrictions, and admitting that, *in general*, the planter may be able to procure free labor provided he give a liberal price for it, we cannot shut our eyes to the certainty that there are *very many* plantations which are too little productive to afford, at best, anything like a free-labor price, and which, in any conceivable circumstances, must absolutely be abandoned; in fact, we can hardly calculate this abandonment at a proportion so low as one-sixth of the whole; which would exhibit a discontinuance of production, to the extent of 38, 500 tons of the 231,000 now raised, being more than the whole quantity of West Indian sugar consumed in the markets of the European continent. On this subject we invite particular attention to the simple matter-of-fact statements of Mr. Innes in his Letter to Lord Glenelg—*passim.*

The first consequence then, of the recent abolition of compulsory labor in our West Indies and the Mautritius will be, and indeed already is, that so much of the of the *continental* sugar-market as those colonies were wont to supply must be furnished from the cheaper labor of the foreign slave plantations; and of those supplies to the continent so failing from the Britsh colonies the annual amount is, we repeat, from thirty-five to forty thousand tons. To this full extent, at all events, and under any possible remissions, we must prepare to see substituted, for the comparatively mild servitude of the British colonies, the oppressive slavery of the foreign settlements, fed by the African traffic; for East Indian sugar being, as official evidence has shown, by much too costly to compete on the continent with the slave-grown produce of the foreign settlements, the case as far as concerns the *continental* supply, seems wholly incapable of the remedy. Still, while we pretend not to deny that the English measure of emancipation is attended with the disadvantage of making room for a great deal of slave-grown sugar, on the continent, let us not be understood as thence inferring any blame to our country. At worst, she may have been a little too precipitate in a right course. Her first duty was felt to be her own reformation; and if that reformation has left a wider scope for the covetousness and cruelty of her neighbors, England, however she may lament the misfortune, at least does not share in the crime.

But though she be thus irresponsible as to the supply which she is enabling the foreign slave-colonies to export in her stead to the continent, her responsibility for her own home-consumption is clear and unqualified. If, on any pretext whatever, political or commercial, whether to help her revenue or to cheapen her purchases, Great Britain admit into her own market a single ton of sugar raised by a slave-importing colony, she is a direct receiver in the felony, with more than the felon's guilt. There will then be renewed, *for her profit*, at Puerto Rico or Bahia, the suffering which will have been vainly extinguished in Demerara and Barbadoes; and on her, therefore, will lie again that load of injustice from which she has so lately and painfully been shriven. We are far from understating the case—the suffering of our negro slaves had come, long before the Emancipation Act passed, to be a mere name, in comparison with what is likely to be substituted for it as the object of our patronage and protection.

Most plainly, unless some honest and firm interposition come speedily to the aid of our own West Indian negro, these flagrant results are but too much to be dreaded, from the necessary tendency of emancipation to produce one or other of two effects—either a great augmentation in the cost of production—or an abandonment of cultivation, not merely to the limited extent of the continental consumption, before mentioned, but generally throughout all the estates of secondary quality; that is, throughout more than half the British plantations. The average annual expense of each negro, including the cost of his dwelling and provision grounds, may be taken to have been, before the emancipation, about £6 sterling per head; so that an estate possessing 300 negroes, and producing 3300 cwts. of sugar, would have required, in the item of negro labor, a yearly outlay of about £1800, or 11s. in the price of the cwt. Even on the assumption, which we here adopt—but which is still denied by the West Indians—(and very streneously are they supported in their view by the *evidence* of Mr. Innes)—*viz.* that wages will eventually induce the generally of the negroes to voluntary labor—it is certainly not to be expected that the wages for the daily number of hours requisite to keep up the production, can average less than a further annual sum of £5 sterling per head. This will add £1500 to the whole cost; being at the rate of 9s. and a fraction, in addition to the former 11s. for each cwt. of the 3300; so that, both during, and after the expiration of, the apprenticeship, the labor, if attainable at all, will be found, even on this calculation, (which is below ninepence a day for each negro on an average of age, sex, health, and strength,) to cost at least £1 per cwt. of sugar, whereof somewhat more than 9s. is a new charge, occasioned by the emancipation.

But sugar, in this country, has become one of the necessaries of life; it has been rendered almost indispensable, even among the poorest classes, by their extensive consumption of tea and coffee. The admission of East Indian sugar, at a duty reduced from its present amount of 32s. per cwt. to 24s., which latter is the amount of duty paid on the sugar of the West Indies—even if such an equalization unaccompanied by any countervailing relief to the West Indians from their present commercial disadvantages under the Na-

vigation Acts, were warrantable in point of justice to the present sugar-growers of the West—would still give no abatement of price; because East Indian sugar (as we shall presently see) may, from all past experience, be expected, if sent hither in any considerable quantity, to require, though at an equalized duty, a price rather above, than below, the sugar of the west, even with the calculated addition of 9s. per cwt. for free labor: the advantages enjoyed by the East Indian in cheapness of labor and other items of his outlay, being overbalanced by the heavier rates of his inland carriage and long voyage to England. Now, as England consumes almost 200,000 tons, or 4,000,000 cwts. of West Indian sugar yearly, an advance on that sugar of 9s. per. cwt. (the estimated additional cost of free labor) would be a tax of nearly £2,000,000 sterling, levied principally upon the working classes of our own people; and and yet, the duties and commercial restrictions remaining as now, it would be an advance altogether avoidable.

Perhaps it would be too romantic to expect that a mere philanthropic consideration for the remote sufferings of the African would lead the majority of the lower ranks in England to acquiesce in the payment of this heavy charge, still less in the surrender or abridgment of one of their most important daily comforts. The rise of prices, to so great an amount, and on so necessary an article, could not, in fact, fail to excite a loud and general demand for cheaper sugar; and since the *British* possessions would be incapable of satisfying this demand, it could be quieted only by the hasty removal of those prohibitory duties which now virtually exclude the sugars of the *foreign*, that is, slave-importing, colonies. With the diminished force and influence which modern events have left to the government, and especially with the present disposition toward free trade of all kinds, such a cry, however vicious, would not be easily resisted, even if the administration were interested in the resistence; but unfortunately, their interests would be with, and not against, such a movement; for it would help them in that great difficulty of all administrations, their finance. The diminution of consumption, compelled by the rise of prices, would have occasioned a grievous deficiency in the revenue produced by the sugar duties: for instance, a diminution of one-fifth would leave a deficiency of near £1,000,000 sterling. But the income so lost to the Exchequer would be but too easily reparable, by the admission of the foreign slave-grown sugars at a low rate of duty; and that would be a sufficient temptation, with most governments, to admit them.

Thus, by the simplest and most natural combination of popular clamor with the interest of the treasury, the whole object of our long struggle on the negroes' behalf is in danger of being frustrated absolutely and for ever. The evil of slavery, expelled from our colonies, will have shifted its sphere, indeed, but increased its amount. Not merely that sixth which has hitherto supplied the continental market—but half—perhaps, two-thirds—of all our West Indian possessions will have been thrown out of cultivation. From the commencement of that desolating change, until the burst of some such general emancipation as we have anticipated in the foreign colonies, the Brazillian and the Spaniard, not the African, will have been reaping the harvest of all our toil, and treasure, and sacrifice; and, in addition to her payment of £20,000,000 for the emancipation of British slaves, England will have sustained the mortification and mischief of depopulation to more than half her West Indian settlements—destruction to more than half her West Indian commerce—*and a frightful aggravation of slavery and the slave-trade.* The sum of human misery will have been augmented by the tremendous difference between the social condition of the British and of the foreign negro; the difference between cottagers, dwelling in enjoyment of all the necessaries and most of the privileges and comforts of life, alike in health or sickness, infancy or age—and men stabled like brutes, and harnessed out to the daily horrors of a toil, whose only redeeming quality is that of shortening the life which it renders intolerable.

Considerations of national defence, too, interpose themselves, though we hope they are not needed, to reinforce our humanity. Not only must the displacement of our sugar cultivation, by the foreign slave-trade, be the displacement likewise of all the maritime strength which the commerce and carriage of West Indian produce have raised and maintained for Great Britain, but the force thus lost by her is gained precisely by that power which alone has a navy capable of giving her moment's uneasiness. It is inevitably transferred to the already formidable harbors of the United States of America; for it is from their shores that the Spanish slave-islands derive their main supplies. Cuba alone takes goods from the United States to the yearly value of eight millions of dollars. Twenty years ago, the direct trade between the United State and the two great Spanish slave-colonies of Cuba and Puerto Rico would scarcely find employment for an amount of 50,000 or probably even 40,000 tons of shipping. That trade now occupies American shipping to the amount of 220,000 tons. To America, from her local position, the intercourse with Puerto Rico and Cuba is in the nature of a coasting trade; and thus, in the commencement of a maritime war, the Americans could man, without difficulty, from so vast a marine, a navy of twenty, or perhaps thirty sail, before the flag of an English admiral could be visible in their waters.

* * * * *

Do what we may, however, the plain, disagreeable truth still is, that we can, in no possible mode, avoid a loss in some shape or other, to the extent of the difference in price between free and slave labor. We may distribute and apportion that loss; but we cannot get rid of it. We have for a vast number of years carried on a trade in sugar, in which we netted, by the labor of slaves, a profit of 9s. or 10s. per cwt. beyond what we could otherwise have attained. We have now, by a great national enactment, given up that profit. But having so given it up, we must patiently bear the privation, and not deceive ourselves into a supposition, that, by any arrangement or contrivance between one set of interests and another, we can—at least for a long time to come—retrieve a single penny of what we have fairly surrendered.

Yet perhaps eventually, even with a view to profit, the present maintenance of the West Indian plantations may prove itself a measure of no

unproductive character. We have already pointed out the probability that our foreign rivals, from the new circumstances of the times, and most especially from the emancipation of the British slaves, will henceforth be more than ever exposed to those perils of insurrection and devastation by which St. Domingo was lost to France. We have shown how surely a successful revolt in any one quarter must be the signal for similar explosions in others; and by what cogent and not tardy causes the region and reign of slavery are likely to be narrowed. We hold it to be clear, at all events, that whenever any effectual check shall be given to the fresh importation of slaves, the foreign colonies, from the insufficient proportion of their female to their male negroes, and from their inexperience in those arts of amelioration by which the British planters have held their slave-population together, must rapidly lose that great command of cheap labor which at present enables them to strive so advantageously against England in the production of sugar. But if, while these defections are beginning to take place in the productive powers of neighboring colonies, those of Great Britain shall have been enabled, by the proposed remissions in aid of free labor, to maintain their extensive production at five-sixths, or even two-thirds, of its present amount, by negroes working for wages, our colonial industry must stand upon a basis more firm and lasting than slavery could ever have constructed.

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After the foregoing article was in type the following paragraphs have appeared in the newspapers, which are here annexed as the latest facts and evidence on the subject. Concise as are the statements, they confirm most of the positions assumed by the reviewer. Jamaica, and all the other British Islands, are rapidly and certainly moving on to that state to which Hayti has already arrived.

"*Abolitionism in Jamaica.*—The last accounts from Kingston, (to April 2d,) represent the affairs of that Island to be in a suffering and fast decaying condition. The apprenticeship law seems to have utterly failed. The Jamaica papers speak in bitter and indignant terms of the present state of affairs. The sugar crop has decreased, crime and vice have increased, and the short-sighted philanthropists have added tenfold to the misery which they sought to alleviate. Free negro labor, in that climate, amounts to nothing. [New York Times.]

"It seems, notwithstanding the efforts of the British to suppress the slave trade, that the western coast of Africa, below the colonies, swarm with slavers. One vessel was recently taken, with a cargo of 600 human beings on board, and a few months ago, twenty-five sail of slave ships were lying at the port of St. Pauls."

QUERY AS TO MARL ON COTTON LAND. SINGULAR MODE OF HAY-MAKING.

Columbia, S. C., April 7, 1836.

To the Editor of the Farmers' Register.

It is a long time since I have written to you—but my long silence is not without a very good excuse, which would be uninteresting to you, or the readers of your interesting Register. As it is, I write to let you see that my regard for your periodical continues as great as ever, than to communicate to you matter of any worth. I learn, with great pleasure, from a friend in Charleston, that your Farmers' Register is now beginning to attract some attention; and, therefore, I hope the almost certainty of its usefulness, in the lower part of this State, may soon cause experiments to test the value of calcareous matters in that section of country that needs it so much, and has an abundance of materials for them. Have any experiments ever been made to test the usefulness of calcareous earth in the culture of cotton? The high price which this article bears at this time would render such experiments most valuable, and tend to show its great use in other articles of culture. Judging from analogy, I am satisfied that marl, or fossil shells, would much increase the cotton crops; for it is most probable that the great crops of cotton produced in Alabama are due chiefly to that ingredient in the soils of that State. Planters, in the tract of country where calcareous earth abounds, would very greatly promote their private interest, as well as that of their country generally, by making full experiments on this subject.

This letter, being desultory, very much like the mind of the writer, I shall now change the subject, and write on what I read may years since, in an European book, the name of which I cannot recollect. It is on hay-making, and I was struck at the time, with the plausibility of the author's notion.

He began, by asserting thatth ehay of youug and tender grass is sweeter, and more nutritious than that made of grass that has been suffered to grow old and less succulent. I cannot ascertain, by my recollection, whether he merely suggested a view not tried before, or whether he had actually practiced the method of making hay which he proposed. What I say on the subject, will, of course, be taken only for what it is worth. His plan was to cut his grass as soon as it is high enough to be cut, to take it off the field at once, and spread it thinly on the floor of a large house, prepared for the purpose, by having its sides so open all round as to admit a free circulation of air. Hay cured in this manner, retained its green color, and its substance was not impaired in any degree by exposure to rain, dew, or the sun. By the time he had more grass fit to cut, that in the house was dry, and the new grass was deposited on the top by spreading it as before. The same operation was continued or repeated as long as grass could be obtained during the whole summer, without disturbing at all that which had been previously deposited in the house. The erecting a suitable building, need not be expensive, though it should be large; for it may be made in the coarsest manner by the farmer's own people. It appears to me that this manner of making hay has a great many advantages over the common mode. First, the hay must be better and more palatable for the horses and cattle. Secondly, it cannot require more, (if as much,) than half the work. Thirdly, the farmer can better select his own time for it, and his grass need never be exposed to rain, by which much of the hay made in the usual way is much injured, and sometimes totally spoiled. Much more might be said on this subject; but this is enough for the present, and if it be thought pro-

per, it may be discussed more fully at a future time.

N. H.

[There are abundant proofs derived from experience, in Virginia, that marling is no less beneficial to cotton, than to other market crops: and besides, there is another important and a peculiar benefit to cotton, in this region. By the marling making the earth warmer, and the growth of the cotton plants more forward, the crop is matured earlier than one equally heavy, on land otherwise manured, and not calcareous; and thereby much good cotton is made from pods that would otherwise be caught unripe, by frost. This particular effect, however, would be of less importance in the warmer climate of South Carolina.]

From the Genesee Farmer.

RECOVERING FROSTED PLANTS.

It is well known that the injury caused to plants by early spring frosts, is not owing so much to the direct action of the cold, as to the sudden application of warmth afterwards. London nurserymen have availed themselves of the knowledge of this fact in recovering plants affected by frost during the night. Their practice is simply to sprinkle them copiously with cold water before sunrise. This produces the same effect as the application of cold water to a frozen limb—abstracting the frost so gradually as to produce no injury to the affected parts.

From the Genesee Farmer.

ROTATION OF GARDEN CROPS.

It is well known that nearly all cultivated crops exhaust the soil; and that most crops if continued in yearly succession on the same piece of ground, grow more feebly, degenerate, and become more subject to disease, unless the soil is constantly enriched by enormous quantities of manure, and even this is not always sufficient to prevent those evils. It is also well known that these difficulties are prevented with far less expense of manuring, by an alternation of different crops, by which plants of the same or similar nature are not cultivated in immediate successsion, but recur at as distant intervals in the course as circumstances will allow. Thus, in grain crops, the leaves being small, nearly all the nourishment goes to the formation of the seed; hence all plants, where seed is the principal product, should never succeed each other. But they may succeed, or be succeeded by, those plants whose principal product is leaves, as green crops of clover; also such plants as cabbage, and others of a similar kind. As plants exhaust that part only of the soil which comes in contact with the roots, a spindle root, such as a beet or a carrot, may draw abundance of nourishment from land, the surface of which has been exhausted by short or creeping roots. Again, crops consisting of plants whose mode of growth or cultivation tends to the production of weeds, should not immediately succeed each other. Hence hoed crops may follow those sown broadcast, as a means of preserving the land clean.

Rotation of crops is especially necessary in garden culture, because here the expenses of cultivation are considerable, and as the crops are generally heavy and valuable for the amount of land occupied, a greater difference results from good and bad management, than in common field culture.

The following course for garden rotation is given in M'Intosh's Practical Gardener:

1. Brocoli, cabbage, cauliflower, and savoys.
2. Common beans, French beans, and peas.
3. Carrots, beets, and parsnips.
4. Turnips, early potatoes, onions, leeks, &c.
5. Celery, endive, lettuce, &c.

The author of the above named work, further adds. "It is found in practice, that celery constitues an excellent preparation for asparagus, onions and cauliflowers.

"Turnips and potatoes are a good preparation for cabbages or greens.

"Brocoli or cabbages are a good preparation for beans or peas.

"Cauliflowers prepare well for onions, leeks, or turnips.

"Old asparagus land affords a good preparation for potatoes or carrots.

"Strawberry, currant, gooseberry, and raspberry, for the same.

"Turnips give a suitable preparation for celery or endive; and peas, well manured, are a good preparation for spinach, &c."

RESULT OF THE PETITION OF THE AGRICULTURAL CONVENTION.

The last session of the legislature of Virginia was not closed until when well advanced into its fourth month; and would not then have been ended, but for the near approach of the next elections of members—which is the only effective limit, and term of the duration of the sessions, which *now* exists. The petition of the Agricultural Convention for some legislative aid to the diffusion of the knowledge, and promotion of the interests of agriculture, was presented on January 14: was referred to the Committee of Agriculture and Manufactures, and ordered to be printed, (as usual with the most important papers,) *for the use of the members*—which, whether viewed as a compliment, or otherwise, the result has shown was a useless and worthless measure, and not deserving the very small expense required for the printing. Time passed away without any action, any consideration, or any manifestation of a desire to act upon, or to consider the petition, or its objects—and it soon became evident to its most zealous movers and advocates, that nothing would be done in accordance with its prayer. From our long established opinion of the character of the legislative procedure of Virginia—of the description of persons who have long guided or controlled it—of the means by which such dignities are usually gained—and of the kind of qualifications best suited to keep possession of them—for all these reasons, we had but faint hopes of any efficient and serviceable enactments for the advancement of agricultural knowledge—or indeed for the *practical* promotion of any of the great and impor-

tant interests of the commonwealth. We were therefore in a great measure prepared for a final rejection of the petition of the Convention, after some *appearance* of deliberation thereon. We had even (in imagination) anticipated the kind of *reasoning* that would be used to oppose the general measure—and were prepared to hear of the ridicule and scoffing of every particular proposition that had been (or could be) made, for the advancement of agricultural improvement—and still more to hear the *economical* objections of members, who would not have hesitated to spend more public money than all that was required for a year's expense of a Board of Agriculture, in a contested election of a doorkeeper of their hall. But we were *not prepared* for the actual course by which the expected result was reached. The petition was not *rejected*—for in truth it never was acted upon, considered, or its objects in any way discussed by the legislature—and almost as little may be said of the action of the Committee of Agriculture, to whose charge the petition had been referred. As late as five or six weeks after that reference, the committee had not taken the petition into consideration, and had taken no step whatever, with regard to it. Afterwards, at the request of its chairman, and aided by his interest and support, (and for which, however, ineffectually exerted, that gentleman deserves the thanks of the friends of the measure)—the Committee of Agriculture, took up the petition—but only to ask of the house, "to be discharged from its further consideration;" which was done, with the utmost readiness. This final dispositon of the petition attracted so little attention, that probably half the members of the legislature did not know of it being made—and it may be doubted whether they know of it yet.

If the most enlightened and patriotic legislature that Virginia has ever been blessed with, had, in good faith, and with the best intentions, undertaken the novel subject of aiding the improvement of agriculture, there would necessarily have been much diversity of opinion, and on that account, a probable want of final and proper action, during the first session. But the discussion of itself, would have done much good, and would have certainly led to future and beneficial action. With even this evidence of disposition to aid agriculture, and the prospect which it would have offered of future results, the friends of the cause might have been contented. Such certainly would have been our own view of the matter—and however anxious that *something* should be done to further the general object of the Convention, we would have preferred that there should have been *too little*, rather than *too much* action of the legislature; or that any particular measures should have been adopted, unless with due deliberation, and in the manner best calculated for permanency. If, at the last session, the legislature had extended (and limited) their action to simply instituting a Board of Agriculture—a mere consulting and advising body, of eight or ten members—which would not have cost annually more than $1000; and which institution, would not have pledged the legislature to any other special measure or action in future—we would have preferred that course to the adoption of all of the other recommendations of the Convention. This admission may perhaps, be thought to contradict our former expressions, or acts. But there is certainly a great difference between the advocating by a private individual, of general measures, or a system, for the adoption of government, and of hasty enactments designed to bring such general measures into operation. Of the value of the *end* in view, there is no question: but of the *means*, there may be much to doubt, and to fear—and the adoption of unsuitable means—though haste and want of due consideration, would greatly retard, instead of hastening the results desired.

But the mode in which the last legisluture disposed of the petition of the Convention, furnished no ground to suppose that the objects of that paper, would have found favor under any circumstances. The course was precisely such as might have been expected, from a body that closed their long session by passing or rejecting bills almost *en masse*, and in the most indecent haste, after having spent two weeks, or more, in discussing abstract resolutions on the northern abolition movements—(a question on which the members professed to be all of one opinion—) and which resolutions, when finally passed, could not lead, and were never expected or designed to lead, to any practical, useful, or *direct* end whatever. They have been laid before Congress. Their existence is scarcely known to one abolitionist in a thousand—and on not one of them, nor on any one else, have the resolutions had the slightest effect. This is a peculiarly forcible, but yet true illustration of the general character of the legislative procedure of Virginia; and the existence and long continuance of that character, is the sorest of all the many evils under which the best interests of the commonwealth are suffering and sinking. The "anti-abolition resolutions" are particularized, not so much for the enormity of the case, as because they were in the uncommon position of not presenting a question of creed and conflict of political parties: and opinions on questions of the latter kind, will always be carefully avoided in this journal.

Such censures as we now utter, may perhaps apply with peculiar fitness to particular acts and times, or to particular bodies of men. But generally and correctly they apply, (and so we design them to apply,) to all times for twenty years back, or more—and to all parties, whether forming majorities or minorities in our legislature. We fear that it is the incurable vice of Virginia legislation to *talk*, and not to *act*—and that it will continue to be distinguished for its abundant fruits of long speeches upon abstract questions—and its utter neglect of useful and practical works. Because Madison, and Taylor, and Giles, and other intellectual giants of that time, by the discussion of resolutions in the Virginia legislature, effected a great political reformation—many, even of the pigmies among their successors, have aped the form of their example, and tried by mere "resolutions" upon almost every federal question of interest, to produce important results. The peculiar circumstances which existed in '98, the cause, and above all the *men* who acted—produced the results—and not the manner of action (by passing reso-

lutions,) nor because the theatre was the House of Delegates. Yet an unhappy consequence of those glorious events has been to establish in the Virginia legislature a fashion of discussing and adopting series of resolutions at almost every session, on mere abstract questions, and in that way to waste the time of the assembly, and the treasure of the state—and to overlook and neglect all great practical interests. Yet all these feeble and ridiculous attempts to assume the port and dignity of the great original examplars, have resulted in nothing—unless to raise to some notoriety and temporary importance, and perhaps to higher political station, some of the busy movers and supporters of such "resolutions." The general result has been to degrade the character of our legislation, and to render it as ridiculous abroad, as it is inefficient at home.

These expressions of censure are directed to the general legislative course described, and not to any particular acts, or opinions, or to men who have sustained either. Our own individual and private opinions have in most cases, concurred with the various resolutions that have been at various times adopted in the legislature of Virginia—and in some of them, we had an humble participation, and lent to the measure a zealous and hearty support. But without regard to the purport of such resolutions, we protest against the entire course pursued with regard to them, and call on every true friend of the interests of Virginia, to declare war against all such discussions of unsubstantial abstractions—and to demand that the true practical interests of Virginia shall not continue always to be neglected, merely to indulge political aspirants and office-seekers in exhibiting their to supposed talents, and their claims to the rewards for which they offer resolutions, and make speeches thereon. The people, those who make legislators, must take this matter in hand, and insist that something shall be done for agriculture, instead of there being an almost regular waste of some weeks of every session, in discussing abstract resolutions—by which, what ought to be a dignified legislature, is converted into a mere debating society; and hundreds of thousands of dollars are spent, merely that Mr. A. or Mr. B. may show that he would cut a good figure in Congress, if the people of his district could be so impressed with his merits as to send him there.

Nevertheless—let the friends of agricultural interests not cease to exert every effort to promote the diffusion of agricultural knowledge, and that too by means of legislative aid. Let every one who is impressed with the value of the object, exert his influence at home to advance it, and the voice of the next Agricultural Convention may be heard, and its prayers not be so totally neglected as those of the last.

From Chaptal's Chemistry applied to Agriculture.

GENERAL VIEWS OF THE ATMOSPHERE, CONSIDERED IN ITS EFFECTS UPON VEGETATION.

In order to judge of the influence which the atmosphere exercises over vegetation, it is necessary to be acquainted with the peculiar and characteristic properties of each of the elements of which it is composed, and to study their action upon terrestrial bodies.

The gases, azote and oxygen, are the two fluids, of which the atmosphere is essentially composed; they are found in uniform proportions, even in the highest regions from which they have been brought. M. Gay-Lussac has established this fact, by a comparative analysis of the air taken from the height of twenty-three thousand feet, and of that which is upon the surface of the earth.

There are certain other fluids, which are uniformly found in the atmosphere, but in very variable proportions; the principal of these are carbonic acid, water, the electric and magnetic fluids, light, and heat. The two last mentioned, exercise a very marked influence, not only on vegetation, but on all the phenomena which terrestrial bodies present to our notice; and though they do not enter essentially into the composition of the atmosphere, their action is so closely united with that of its principal constituents, as to be nearly inseparable from them. In order that the action of the atmosphere may be better understood. I propose to to treat separately of all the fluids it contains, and afterwards to show the phenomena which the application of them to agriculture exhibits.

Of the Ponderable Fluids contained in the Atmosphere.

The ponderable fluids contained in the atmosphere are azote, oxygen, carbonic acid, and water.

1. Azote constitutes nearly four fifths of the atmospheric composition, and yet, by a singular caprice of nature, it exercises less influence on the substances of the three kingdoms, than any one of the other principles contained in the atmosphere. This gas is found in small quantities in some of the products of vegetables, and abundantly in those of animals. The presence of azote in some of the products of vegetation is to be accounted for by its presence in the water, which plants imbibe from the atmosphere, and in those manures by which plants are nourished, and of which it forms one of the principal constituents.

In animals, in which azote is more abundant than in plants, the food by which they are nourished, and the air which is inhaled by respiration, concur equally to account for its presence. The experiments of Messrs. de Humboldt and Provençal upon fish, Spallanzani upon reptiles, and those of Messrs. Davy, Ptaff, Enderson, Edwards, Dulong, &c. upon man, leave no doubt as to be absorption of azote during respiration; but this absorption is unequal and irregular, varying according to circumstances; this gas differing from oxygen in this particular, at least in its effects upon animal and vegetable economy. The action of azote is, so far as it is known, of such trivial importance, that we are at a loss to account for the proportion which nature has assigned it in the composition of the atmosphere. It is supposed by some, that all the gases, all the vapors, and all the exhalations which arise from the surface of the earth, form in the atmosphere an immense magazine of azote, which is returned thence as it is needed, either for the support of an-

imal and vegetable life, or to produce those phenomena of composition and decomposition, which are constantly renewing the surface of the globe. The specific gravity of pure azote is to that of the atmosphere in the proportion of 9,691 to 10,000.

2. Oxygen gas forms about one-fifth of the atmosphere. The specific gravity of oxygen is to that of the atmosphere, as 11,036 to 10,000. The effects produced by oxygen are equally numerous and important; it supports animal life by respiration; and combining with the carbon of the blood, it produces the greatest proportion of animal heat. The germination of seeds is promoted by this gas, and it is absorbed by the leaves of plants during the night: by its combination with the metals the oxides of them are formed. It is likewise the necessary agent of combustion, and concurs powerfully in the decomposition of all animal, vegetable, and mineral substances.

In all cases where oxygen exerts its action, it combines with some one of the elements upon which it acts, forming acids with carbon, azote, sulphur, phosphorus, and many of the metals; water with hydrogen, &c. The nature of the compositions, of which oxygen is an element, varies according to the proportions in which it enters into combination.

When we survey the extent and importance of the operations performed by this gas, and especially when we consider that it is constantly forming new bodies, with which it afterwards ceases to have any connexion, we are almost led to fear, that the atmosphere must be, sooner or later exhausted of this active and regenerating principle; but nature, we find, is continually repairing the loss thus sustained, by the production of equivalent quantities. The leaves of plants, under the influence of the solar rays, pour forth into the atmosphere torrents of oxygen, produced by the decomposition of carbonic acid and of water; of which they appropriate to themselves the carbon and the hydrogen.

It is without doubt possible, that in many situations the reproduction of oxygen is not in proportion to its consumption. This must happen especially where great quantities are required for respiration, or to support combustion. But this deficiency is only partial and momentary; for the great mobility of the atmospheric fluid enables it, almost immediately, to restore its equilibrium from all points. The agitation of the wind mixes together, in proportions nearly constant, both the elements of which the atmosphere is composed, and the principal fluids which are found in it.

The creation or destruction of any element is not to be found in the operations of nature. The numerous phenomena of composition and decomposition, which take place upon the surface of the globe, present only changes of combinations, which are formed according to fixed, eternal, and unchangeable laws. Thus nature is regenerated, without being impoverished; and matter experiences only those changes which are reproduced uniformly and periodically, especially in organic bodies.

3. Carbonic acid is found constantly, but in various proportions, in the atmosphere. Though much heavier than azote or oxygen, its weight being to that of the latter, as 1,520 to 1,000, it is found disseminated throughout the whole atmospheric region. The elder M. de Saussure has, by means of lime-water, drawn it from the air upon the summit of Mont Blanc. From the results of all the experiments that have been made, there can be no doubt, that the proportions of azote and oxygen in the composition of the atmosphere are uniform and nearly invariable; and it appears to be likewise proved, that carbonic acid is also found there, and at all heights, but in various proportions.

M. Th. de Saussure has compared the different portions of carbonic acid in the atmosphere which he has analyzed, and found the difference between them, in summer and in winter, to be as follows.

In winter.

31st of January, 1809, 10,000 parts of air contained	-	carbonic acid	4,570
2d of February, 1811	-	" "	4,660
7th of January, 1812	-	" "	5,140

The mean term in winter from 10,000 parts of air was,

In volume	-	4,790
In weight	-	7,280

In summer.

20th of August 1810 10,000 parts of air contained	-	carbonic acid	7,790
27th of July, 1811	-	" "	6,470
15th of July, 1815	-	" "	7,130

The mean term in summer from 10,000 parts of air was,

In volume	-	7,130
In weight	-	10,830

Without doubt, when the air is tranquil, or when the carbonic acid, which is produced so abundantly by fermentation, respiration, combustion, &c., is retained in confined places, the quantity of this acid will exceed the ordinary proportion; but from the moment that the agitation of the winds can mingle it with the atmosphere, it is spread and diffused towards all points, according to certain fixed laws. Unless in some extraordinary cases, which form exceptions to the general rule, carbonic acid exists in the atmosphere at most only in the proportion of $\frac{1}{300}$.

Carbonic acid is constantly absorbed and decomposed by the leaves of plants. The carbon is appropriated by the plants to their own support, and the oxygen is thrown out into the atmosphere. Carbonic acid combines with the lime in fresh mortar, and causes it to return to its original state of lime-stone. Under the pressure of the atmosphere, water will hold in solution nearly its own volume of carbonic acid, and be slightly acidulated by it; but under the force of a greater pressure, it will contain a much greater quantity. Water, thus charged, froths like Champagne wine, which owes its effervescence to the carbonic acid produced by the fermentation of the wine in well-corked bottles. In some recent experiments carbonic acid gas has been reduced by compression to a liquid state.

4. Water exists in the atmosphere, under the form of an elastic fluid. When it is absorbed by bodies for which it has a strong affinity, such as the calcined muriate of lime, the portion of air from which it is taken, is diminished in weight

and volume. This has been proved by the experiments of the elder M. de Saussure and of Davy. The quantity of aqueous fluid contained in the air, varies according to the temperature of the atmosphere, and increases in proportion as that is elevated. At 50° Fahrenheit, it forms in volume nearly $\frac{1}{30}$ of the atmospheric fluid; and as its density is to that of the atmosphere in the proportion of 10 to 15, it constitutes nearly $\frac{1}{75}$ of its weight (Davy.)

The aqueous fluid forms, when the atmospheric temperature is 34° Centigrade = 93°.20, (Davy says at 100°,) $\frac{1}{14}$ of the volume of the air, and $\frac{1}{21}$ of its weight.

The elder M. de Saussure, in his beautiful *Treatise upon the Hygrometer*, has determined the weight of the water contained in a cubic foot of air, at different temperatures, and has prepared the following table of the results.

Degrees of hygrometer.	Weight of the water contained in a cubic foot of air at 66°.2 Fahrenheit.	Weight of the water contained in a cubic foot of air at 45°.9 Fahrenheit.
	Grains.	Grains.
10	0.4592	0.2545
20	1.0926	0.6349
30	1.7940	1.0833
40	2.5634	1.5317
50	3.4852	2.0947
60	4.6534	2.7159
70	6.3651	3.3731
80	8.0450	4.0733
90	9.7250	4.9198
98	11.0690	5.6549

"Consequently," adds M. de Saussure, "I do not think we are far from the truth, in assigning 11 grains of water to saturate a cubic foot of air, at the temperature of 15° of Réaumur," (equal to 65°.75 Fahrenheit.) "The solution of these 11 grains of water in a cubic foot of air at the temperature of 15° Réaum. (equal to 65°.75 F.) increased the density of the air so much, that the barometer, which before was at 27 inches, rose to 27 inches 5 lines 79,411, that is to say, about 27 inches 6 lines; consequently, the density of the air, or its volume in the receiver, was increased about $\frac{1}{54}$."

When the temperature of the air is diminished, the aqueous fluid is condensed, and appears in the atmosphere in the form of vapor, and is deposited in the state of dew. The moisture of the night air from this cause, during the heat of summer, restores vegetation from that state of languor produced by the too great warmth of the day.

Oxygen and azote have been classed among the simple bodies; carbonic acid and aqueous fluid among the compound bodies, of which the principal constituents are known, and which can be formed and decomposed at will.

100 parts of carbonic acid contain—

	carbon	27.36
	oxygen	72.64
10 parts of water contain,	hydrogen	11.06
	oxygen	88.94

Oxygen and azote constitute, essentially, the atmosphere; since, when the two other principles are separated from it, it still retains nearly all its characters of form, elasticity, &c. It however loses its most important powers of influencing vegetation; so that all the substances found in the atmosphere are necessary to the production and renewal of the phenomena which the three kingdoms present to us.

Of the four principles of which I have just spoken, as constituting the atmosphere, the aqueous fluid is that which appears the least closely united to the others; since a change of temperature alone is sufficient to produce a change of its proportions; whilst azote, oxygen; and carbonic acid preserve, always, nearly the same relative proportions; nor can they be varied, or disunited, by means of compression or change of temperature. The aqueous fluid does not rise to a great height in the atmosphere; for, according to the reports of those experimentalists who have arrived at their conclusions by the assistance of air-balloons, the higher regions of the atmosphere are very dry, so as to produce, by the avidity with which they absorb the moisture from the boat of the balloon, a warping and cracking of its boards, as if they had been exposed to a strong heat. This effect is produced by the dryness of the atmosphere and the diminution of its specific gravity.

The manner in which the atmospheric elements are united is worthy of notice. This union is sufficiently strong to counterbalance the difference in their specific gravities, and not to allow them to be separated by compression, or the tumultuous agitation of the air; and yet it permits the various principles to be decomposed and isolated, by presenting to them bodies for which they have some slight affinity. Thus, if we inclose under a bell-glass any volume whatever of atmospheric air, the aqueous fluid may be extracted from it, by the calcined muriate of lime. The combustion of phosphorus in it will absorb the oxygen gas; lime-water, or the caustic alkalies, will combine with the carbonic acid; and nothing will remain but azote, which is the portion that has the least tendency to form combinations.

This weak state of union among the principles contained in the atmosphere is necessary, in order that they may exert their powerful and constant action upon all the various bodies which cover the surface of the globe; the composition and decomposition of which cannot be effected otherwise than by the means of these agents.

Independently of those bodies which essentially constitute the atmosphere, there are mingled in it the exhalations constantly arising from the earth; these are again disengaged from the air, and precipitated, as soon as the heat, or any other cause which occasioned their ascension, ceases to act upon them. These exhalations modify the properties of the air, and affect its purity. The oxygen and the water of the atmosphere become impregnated with the particles of the exhalations which are deposited with them upon the surfaces of other bodies, where they remain in contact, or enter into combination, with them. The origin and dissemination of many maladies may be traced to this source; the germ of them is carried through the air by the aqueous fluid. And for the same reason it is, that intermittent fevers are endemic in those situations where large quantities of animal or vegetable matter are undergoing decomposition, as upon the borders of ponds and marshes; and that miasm, which arises from

numerous animal remains in a state of decomposition, becomes a fruitful source of disease. It is for the same reason also dangerous, under some circumstances, to breathe the evening air; the aqueous fluid contained in it, is loaded with the noxious principles, which the heat of the sun during the day had caused to ascend into the atmosphere. The disagreeable odor, conveyed to us in mists, is owing to the power of the aqueous fluid in transmitting the exhalations arising from the earth.

The manner in which the air conveys to us the perfume of plants, and the odor which it contracts from the exhalations of bodies in a state of decomposition, indicate clearly its influence in producing maladies, and still more plainly its power of propagating those that are contagious.

[To be continued.]

From the Boston Courier.

BROOM CORN CULTURE.

A broom corn mania is getting up in this region, and the coming spring, from appearances, little else will be seen in meadows. Broom brush is unexampled in price, selling readily at fifteen cents, and ashes to put on broom corn land, sell now at twenty-five cents per bushel in this village. The produce of an acre of broom corn was sold the other day in this town for $130.

THE MONEY MARKET.

To the Editor of the Farmers' Register.

"The expected increase of bank capital in this state will not be obtained this year. The legislature not having had time, during a session of three months, to act on this subject. This may tend to retard the improvements which are now in embryo. An advance in the price of the stock of the existing banks has resulted from this neglect, and 118 to 120 per cent. is now spoken of for Virginia and Farmer's Bank stocks. Petersburg Rail Road shares command 119—Greensville and Roanoke $8 or $9 advance on $35 paid. The subscription to the Raleigh and Gaston Road, which is reopened for a limited amount, is freely taken, and the work is commenced.

The cotton manufacturing establishments are in a thriving state. The stocks of those in Petersburg, which are now in operation, command 25 per cent. premium, or more. Their goods are in request in all the southern, and some of the northern markets."—*Com. Rep., Far. Reg., p.* 768.

Sir: Such is the view taken of the refusal of the legislature of Virginia to increase its banking capital, and such the result of the actual state of things, so inimitably described, and so encouragingly stated in the latter part of the first paragraph. Since they were written, Massachusetts and Maryland seem to have simultaneously thought and acted with Virginia; and will have all performed their duty to themselves, their contemporaries, and to posterity. Surely it will be but prudent to try the result of the $20,000,000 about to be thrown on the money market of Europe, before fully $30,000,000 more should be issued. An admirer, and as far as my influence has extended, a supporter of the Bank of the U. S., I will freely confess I dread the effect of their attempt to raise this money, by what is neither more nor less than a sale of stock in London, on the state of exchange; and in consequence of its reduction, on the staple articles of the country. It deprives them of their fair chances, as the means of paying the general debt of commerce and gives it to the holder of capital, too often fictitious: and should the money jobbers, in Europe, dreading the actual state of things, in the United States, not give a good price, or take but a portion, the effect of such a circumstance would be doubly disastrous on the value of all monied securities. Besides, when we read of such an attempt as that, seriously made, and which Congress must and assuredly will as steadily resist, to issue $200,000,000 of stock on the credit of the public lands, and for the purpose of raising a revenue on commerce to discharge the interest, it is enough to appal the stoutest heart. Why not repeal the duties, lessen the expenses of the Government, and depend on the land? The spirit of Law of Lauriston, must have arisen in the midst of us, and at a moment when convulsions of a dismal character are opening on our view, are we witnessing the "crowning" work, which is, first to starve the laborer, and last, deceive and ruin the wealthy proprietor; for such will be the inevitable effect of a system, which confines the capital of the country to cities, and destroys the yeoman. A fine example of it is to be seen in South Carolina, where the superior attraction of capital in stock companies has concentrated it in Charleston, to the ruin of the great proportion of fine land around it. It will do more than this. The high price of provisions will enhance the value of labor, and in its turn, this will check the progress of manufacture, paralyze an immense capital, and throw the country into a full and perfect state of dependence on foreign nations. This very year a heavy *exportation* of specie will be required to pay for the necessaries of life to be *imported*, and if the issue of paper is to be as great as is threatened, its general effect on provisions, the value of labor, and on manufactures, must and will be indeed dreadfully disastrous. The instant repeal of the whole tariff, would not only be infinitely preferable, but perfectly efficacious. However, this is but prefatory. My object is to take a view of the situation of Virginia, and Maryland, and to propose a remedy, which shall preclude an enormous issue of paper, and still effect the designed object. This will be done by making a State Loan of, say $10,000,000, payable in, say 30, 40 or 50 years, instead of increasing the bank capital; as, in the one instance, calling for it as you want it, you know exactly for what purpose and how much you issue; and in the other, are no more masters of its amount and application, than you are of the wind. As to the vulgar notion of going into debt, it is pretty much the same in both cases; and hence, on that score, there need be little difficulty. My plan would be, if it was possible, that Maryland, Virginia, the Carolinas, and Georgia, should unite in borrowing as much as was wanted; and after proper surveys of the projected works had been made, they should either singly or together, complete them, and when completed, they should sell three-fifths, or four-fifths of them to the public in shares of $100 or $50 each, or, perhaps, they *might* pay such a revenue as to make them worth retention—the final disposition to be determined by events.

The credit of the different States on the London

Stock Exchange, is various. What that of Virginia is, I am ignorant; but, if she boldly resists the crazy scheme of increasing the banking capital, and precludes the consequent enormous issue of paper, I am convinced her 5 per cent. bonds would sell, as readily, if not more so, than those of New York, or even Pennsylvania—for I cannot but confess, that I fear the latter may rather exceed her due limits. Let the facts, as stated by X, be communicated to a loan jobber, and he will more readily lend his money to such a community, than to one that was going to bank with it; especially, as he would know its expenditure was to be confined to a measure improving the condition of the borrower in such a degree as to double his security, for such would inevitably be the case, if it is laid out in canals and rail roads.

By adopting a measure of this sort, you would prevent the possibility of your farmers mortgaging their estates in the great pawn shops, which are every where opening, in either an avowed or disavowed manner; and by the improvements you executed, you would effect the desirable object of increasing the real value of the land—thus conferring the double favor on the state, on the one hand, preventing the farmer from "being led into temptation and delivered unto evil;" and on the other, adding to the value of his property, and increasing those means of taxation to which you would be compelled to resort—but, increasing them in such a way, as that the then large amount should not be equal to the *former* lesser sum.

C.

From the Genesee Farmer.

MOUSE TRAP.

The following contrivance for catching mice will perhaps be new to most of our readers. Provide a large earthen pot, with a hole an inch or two in diameter in the bottom, (a large gardener's flower pot will do,) invert it on a board or flat smooth stone, and sink it in the ground ,until the bottom of the pot is about level with the surface. Suspend, about two inches below the hole, by means of wire, a smooth wooden roller, which should be capable of turning freely on its axis. The surface about it may be sprinkled with chaff or short straw, and grain or seeds, and the roller be besmeared with lard and other attractive substances. Upon this roller the mouse leaps, and it immediately turns by his weight, and precipitates him to the bottom, from whence he cannot escape, as it is impossible for him to climb the sides. Many may be caught in the same trap without the trouble of re-setting. By burying the pot in mellow earth or sand it is easily taken up and replaced. This method is particularly adapted to catching mice in gardens, cellars, &c.

From the Norfolk Herald.

HERRING FISHERY OF NORTH CAROLINA.

We learn that the fisheries on Albemarle Sound, which at the commencement of the season were more unpromising than usual, are now completely overrun by the herrings, which suddenly made a rush down the rivers in such immense numbers, that in some cases large quantities caught were left to spoil for want of salt to pack them with; and we have been assured that in one or two instances the proprietors of fisheries, being unprovided with a sufficient supply of salt, have preferred lifting their seines and giving the fish a free passage, rather than haul them ashore.

From Loudon's Gardener's Magazine.

REMOVING SHRUBS FROM RENTED GARDENS.

At the last York assizes, an action was brought against a party for removing shrubs, &c. from a garden he had recently occupied; and a verdict under the judge's direction, was given against him. The judge laid it down as law, in the nineteenth century, that shrubs, when once planted, "became part of the freehold; and, therefore, could not be removed." Would you admit the discussion of this point, not legally, but morally, into your Magazine? It is, in the present state of the country where there exist so many tenancies, during which immense improvements are made in gardens, a very important one. I deny that this is law, because I deny that the trees are part of the freehold; for, if they are, then are carrots, thistles, and, much more, docks, also part of the freehold, and ought not to be removed. But, if it is law, it is fit that all parties knew it, that, if dissatisfied, they may set about getting it altered.

From the Genesee Farmer.

TO DESTROY ST. JOHNSWORT.

Mr. Tucker—I noticed in the Genesee Farmer of the 27th February, inquiries how to destroy that troublesome weed, St. Johnswort. Till your land well, seed thick with clover and timothy, and plaster. In case your seed partially fails, pasture close the first season—even sheep may eat the weed when young and tender, without any injury to them.

L. T.

East Bloomfield, April 7, 1836.

From the Genesee Farmer.

TO PRESERVE CORN FOR BOILING.

Extract of a letter from a subscriber in Canada:—"Travelling through the country the early part of this month, I was surprised at eating green corn; but on recollection, I had seen several methods of preserving it for winter use in your Farmer. On asking the lady of the house, her method seemed to be far different from any you have stated. I beg to introduce its simple way to you. Pluck the corn when fit for eating, strip down the husk so as to remove the silk' and then replace it—pack it away in a barrel, and pour on strong pickle, such as used for meat, with a weight to keep it down, and you will have a good sea stock—par-boiled and then boiled to make it perfectly fresh and sweet as when taken from the stalk."

From the Journal of Commerce.

COTTON AND THE COTTON TRADE.

The report of the Secretary of the Treasury on

this snbject made 4th March last, by order of Congress, is a document of much value and importance, and contains a variety of tables relating to the growth and manufacture of cotton in all parts of the world. The first export of cotton from the United States, appears to have been in 1785, 5 bags, aud in 1786, 6 bags. As late as 1794, Mr Jay, when making a treaty with England was not aware that any cotton was exported from the United States. From that time to the present, the culture has increased, until our crops are now over 1,300,000 bales a year.

From this report it also appears that the import of cotton goods from India to England has ceased, and that the export of them from England has increased with astonishing rapidity.

When the East India Company's monopoly of all the trade of India ceased in 1815, the first private merchant ship that sailed from England for India, was the ship John Gladstone, belonging to Mr. John Gladstone of Liverpool. This event was mnch spoken of in the papers at that time, as opening a new era in commerce. It now appears that the export of cotton goods alone, from England to India, is over ten millions of dollars annually, being more than their export of cotton goods to the United States, which is about eight millions of dollars. But now that the East India Company's monopoly was last year put an end to in China, as well as in India, a vastly greater field is open in that quarter for English cotton goods, which will in consequence, increase in an equal ratio the consumption of American cotton in England, quite as fast as we are able to increase our supplies.

From Low's Elements of Agriculture.

MILLET.

Under the term millet are comprehended certain plants of different genera which are cultivated for their seeds:—

1. Panicum miliaceum—Common Millet.
2. Setaria italica—Italian Setaria.
3. Setaria germanica—German Setaria.
4. Sorghum vulgar—Indian Millet.

Common millet grows several feet high, and is terminated by a large branched panicle hanging to one side. It is very prolific in seeds. These are small and smooth; in some sorts brown, and in others yellow. The plant is cultivated extensively in Russia, in Italy, and Germany. Its seeds, being divested of their outer covering, are used in the manner of rice, and furnish a nourishing and grateful food. They are also made into bread, which, however, is not esteemed. They are used for the feeding of domestic fowls, for which they are well suited. The straw produced is bulky and valued for provender.

The cultivation of common millet is not practised in this country. It is not with us a part of the food of the people, while with respect to the feeding of domestic fowls, we have so many resources in the waste of our cereal grains, that there is scarcely need of cultivating any plant expressly for the purpose. But more than this, millet is not well suited to the colder parts of Europe, and supplies of it can be obtained in unlimited abundance from the shores of the Mediterranean.

The Italian setaria, cultivated in the south of Europe, is only known to us in this country as a plant of the garden. It is too delicate for the northern parts of Enrope: for even about Bordeaux it is a precarious crop, suffering frequently from the effects of frost.

German setaria is cultivated in Hungary in fertile subhumid soils. It is used in its green state, or as dried fodder for horses and oxen.

The Indian millet furnishes bread to the Arabians and other people of the East. The flour is known to the Arabs under the name of dourra; and it is truly the bread-corn of Africa, being grown over all the parts of that vast continent. It is cultivated likewise in Italy and the south of Germany; and it was long ago introduced into Spain, it may be supposed by the Moors, if not at an earlier period still by the Carthaginians. It has been introduced also into the islands of the West Indies under the name of Guinea corn and into the Southern United States of America.

This fine plant grows with a strong reedy stem with broad leaves like those of the maize, but smaller, and producing a large panicle. Its seeds are smooth and roundish, resembling those of the common millet, but larger. They are ground into flour, but the bread made of it is dark in colour and coarse. In Europe the grain is chiefly used for feeding domestic fowls and pigeons, for which it is well suited.

This plant is the native of a warmer country and demands a more genial climate than we possess. With us it will scarcely even ripen its seeds, and frequently not even expand its flowers. Other species of Sorghum are likewise cultivated, but the same remark applies with more or less force to them all.

COMMERCIAL REPORT.

The active business which was done in domestic produce previous to the present month, has not continued, and the prices of the most important articles have declined, though they still continue high enough amply to repay the labor of producing them.

The price of tobacco has fallen $1 to $1 50 per cwt., and sales range from 5 to $10, not including fancy qualities. Accounts from the European markets are generally unfavorable, and the season for shipment has not arrived. Cotton has also declined about a cent, and may be quoted 15½ to 17½ cents, (in Petersburg,) with little disposition evinced on the part either of buyers or sellers to let the article change hands. The advices from Europe are favorable, but prices in this country had anticipated more than all the advance that has yet taken place there; about 70,000 bales more have been brought to market than at the same time, in 1835.

Flour is dull, at $6 75 per barrel for country brands; but the stock in Virginia is unusually small. Large supplies from the west are arriving in the northern cities, since the opening of the rivers and canals, and the foreign demand is very limited, being confined to the West Indies and South America. Importations of wheat, rye, oats, and barley to a considerable extent have been made at New York, from England, and the continent of Europe—a circumstance unprecedented in our commercial annals.

Indian corn commands $4 per barrel, (or 80

cents per bushel,) which is a high price when the abundance of the last crop is considered; and bacon is also very high, being worth 13 to 13½ cts. per pound.

A severe pressure for money has prevailed in the large commercial cities generally, and two per cent. per month was readily obtained for the use of it. Exchange on England fell to 5½ per cent., and stocks of almost every description declined in the northern cities materially. This pressure is ascribed to various causes, and among them may be enumerated the large amount of property destroyed by the fire in New York, and the heavy investments required to rebuild houses, and to replace the goods destroyed; the great accumulation of surplus funds in the National Treasury, or its depositories, amounting to thirty-five millions of dollars; the substitution of cash payments or short credits for the long credits formerly allowed on duties on importation; the vast sums invested in public lands, in city lots and works of internal improvement; the protracted length of the winter, which prevented an immense quantity of produce being brought to market at the usual time, and of supplies of goods being sent to the interior; the winding up of the branches of the United States' Bank, and the cautious policy necessary to be observed by that bank and other institutions, from the apprehension of government influence being used to the annoyance of the former; the interruption of supplies of specie from Mexico, in consequence of the revolution in Texas; the demand for specie to be sent to Cuba, and other islands, for the purchase of sugar and coffee, and to the British West Indies for the purchase of bills of exchange at a very low rate, being the indemnity paid by the government under the Emancipation Act; and to conclude, the many temptations for investments, offering a prospect of profitable results, in the wide scope presented by the rapid developements of the vast resources of our country. Inand exchanges are deranged, and remittances cannot be made with facility, nor at par.

Articles of foreign produce and manufacture generally command high prices. Sugar, particularly, has advanced beyond any former rate in time of peace; and this may be ascribed to the diminished cultivation in the British West Indies, under the free labor system, and to the failure of the crop in Louisiana. Coffee, now free of duty, bears as high a price as it did when taxed with two and a half cents per pound. Teas have not declined in any proportion to the amount of duty from which they are relieved. The immense demand for iron, has raised the price of that article in England nearly 100 per cent.

The stock for a rail-road from Richmond to Petersburg was filled during the past week, and nearly double the amount required was subscribed. The formation of this work, and of others now in progress, will complete the line from the Potomac to Raleigh.

X.

May 1, 1836.

STATEMENTS OF PRACTICE IN TILLAGE AND IMPROVEMENT, ON RAPPAHANNOCK LANDS.

To the Editor of the Farmers' Register.

Feeling as I do the inadequacy of my annual pittances to the discharge of the debt contracted to yourself, and the useful and zealous collaborators of your Register, a sense of justice prompts me to consider whether a life of 20 years, devoted with such assiduity as circumstances have permitted, to agriculture, might not furnish some gleanings worthy of lessening its obligation. A mind "desultory, studious of change, and fond of novelty," and impressed with distaste or disgust for systems which, from their history and developements, seemed to promise results meagre and stationary, if not retrogressive, frequently urged me in the very outset of my career, far from the beaten track, into others, which the want of an enlightened judgment caused me to pursue to my frequent discomfiture and loss. Such being in the main the mortifying results of my experimental wanderings, the offspring of a too eager and indiscriminating credulity in their inception, and perhaps, in their issue, of want of care in their execution, it was but too natural that I should settle down into the opposite extreme of scepticism, and to regard as impracticable, that which my bad practice alone perhaps had failed to attest. Indeed, Mr. Editor, the extreme paucity of precise results to which my most carefully conducted experiments have led me, has tended to a confirmed distrust of those which are every day announced as results of the experiments of one farmer, and contradicted by those of another, said to be similarly made. And why? Because I am satisfied from personal knowledge, that my own history is pretty much that of the whole class of gentlemen farmers in Virginia, and that nine times out of ten, experiments are made either under some prejudice, or that owing to the neglect or absence of the proprietor, they are abandoned in perhaps their most important stages, to the carelessness of overseers and slaves, leaving room for nothing but vague conjecture at last. And thus, Mr. Editor, are we still, and for a long time to continue, I fear, at sea, in regard to many of the most important principles and practices of our neglected and abused profession, unless, indeed, we hasten to profit by the obvious and the only remedy, so ably enforced by the patriotic president of the late Agricultural Convention, viz. an agricultural professorship in connection with an experimental farm at our University. Then, indeed, may we expect to see, the mists of uncertainty which now envelope the arcana of our science, flee before the torch of experimental knowledge, and our agriculturalists no longer groping in the dark, boldly advancing with an assured step to its richest rewards.

Shrinking with instinctive reluctance from a minuter record of my failures, with whatever denial of amusement or instruction to your readers, I proceed briefly to sketch such of my agricultural operations as may seem to have a chance of affording any portion of the latter. The subject of them consists of 2,000 acres, of which about 250 acres being chiefly a light, sandy soil, from 6 to 8 inches deep, has been cultivated in 3 fields, in corn, followed by wheat, and the hoof entirely excluded. The balance contains about 400 acres of flat, of about the same average quality, though a portion of it, say 50 acres, is a very light, poor sand, and perhaps, as much more is a deep sandy loam of a superior quality; about 100 acres of swamp land, subject to frequent overflows, and seldom producing from that cause half a crop, with about 200 acres of cultivated hills, some of them precipitous

and poor, the balance being hilly, forms a standing pasture. The latter tract, with the exception of the swamp, was for 8 years in 4 fields, during which time it was moderately grazed, seldom commencing earlier than August, on the field to be broken for corn. I think the average product of both parcels might have been 4 barrels of corn, and not more than 6 bushels of wheat, in the last years perhaps 8 bushels. The only source of manure, until 5 years past, consisted of the offal of the corn and wheat, of which both farms shared equally, carried out in the crude state in the spring, upon the corn land. Clover was repeatedly sown upon such portions as were stiff and wet enough to produce it, but generally failed, or afforded but a scant cover.

At the end of the 8 years above mentioned, I was quite at a loss to decide upon the relative quantum of improvement in the two farms; the increase of crops on either, taken as the criterion, scarcely increasing it in any appreciable degree, either positively or relatively. The successful example of Col. J. Taylor, of Caroline, however, had strongly wedded me to the 4 field system, and it was abandoned not without reluctance, in consequence of the heterogeneous character of my land, having hills, flats, and swamps interspersed; the first and last of which imposed a heavy tax in the shape of shrubbing and ditching, when suffered to lie out so long. On resorting to the 3 fields, however, 50 acres of my swamp was laid down in herds grass and timothy, whilst the whole of it has been completely reclaimed by straightening a narrow crooked run, according to the method pointed out in the Register, and thereby adding largely to my crop, especially of corn, whilst that portion of the hills, which had been newly cleared of a considerable number of locusts, and whose sprouts required a heavy amount of labor as often as cultivated, have been laid down in highland meadow, oat and orchard grass and the locust sprouts trimmed up and suffered to occupy the ground, which, in groves of many thousands of considerable size, they now embellish and fertilize—forming, a most important adjunct to my standing pasture. One of them near my house, of about 10 acres, thus treated, which, in addition to the locust, was more infested than any piece of ground I ever saw with that pest, the sassafras, has had them entirely eradicated by grazing. A little salt occasionally sprinkled upon them, has probably expedited it by attracting the cattle. To these abridgments of labor heretofore required, has been added the expunction from my cultivated area of perhaps 100 acres of poor land heretofore cultivated: as much is [cultivated] on most farms in the neighborhood without any profit.

Additional savings have been made in the construction of my fences, consisting for the most part of a cedar watling, scarcely 18 inches high, placed upon a good ditch bank, and inclined outwards to keep off the cattle, and in the cultivation of my corn with the least possible degree of hoe labor.

The experience of more than eleven years having satisfied me that little was to be hoped from mere rest for soils, like ours, too light for clover, and aided only by the offal from its grain crops; I, therefore, immediately set to work to find subjects upon which to employ the labor saved, as above stated, for its improvement. Previous to this, a variety of green crops had been tried as substitutes for clover to be turned in as manure. Rye, buckwheat, cow peas, and Indian corn (sown broad cast early in June, and rolled down and ploughed in as soon as it began to wither in the month of September,) have in the order in which they occur, produced visible effects, but certainly in no degree corresponding with what I had been led to expect, particularly in regard to the peas and buckwheat, from the statements of others; and I consider these practices as only recommendable where it is desirable to remove and plough in manure, to avoid waste. About 4 acres thus sown on my light land, slightly manured the 1st June, 1834, was rolled down, ploughed and sown in rye the 1st of September. This was listed upon the 1st of April, and corn planted, the middles remaining unbroken till some time in May, or until the rye was in head, when it was turned in. The corn, as might have been expected, was not benefited, though the crop of wheat now upon it, evidently shows that the land is. I think that the corn, if cut for provender, would have yielded a greater bulk than any crop of hay I ever saw, and the practice would prove valuable, where there is a scarcity of that article. But to return from my digression: I had seen, for the first time in my life, the effects of marl strikingly exhibited on cotton, on the farm of Mr. F. W. Taliaferro, 8 miles below Fredericksburg, about 10 years ago, and having noticed shells occurring in their strata on the bank of the river (Rappahannock) I made my first essay with it upon a cotton patch of a few acres. The cotton was quite a failure: the succeeding crops of corn and wheat exhibited no improvement, and I gave it up in despair. The clover, however, which was sown upon the wheat, strikingly displayed its hidden virtues, and satisfied me as to its value. To work I went then seriously, for the first time, (6 years ago,) and taking advantages of a low tide, with the aid of scoops (or scrapers) and all my force of hoes, succeeded before its rise in scraping off the sand to the depth of about 18 inches, from (as I judge) more than the sixteenth part of an acre, thus denuding the marl for that space; and in throwing up a sufficient bank, afterwards faced with plank, to resist the tide. Two ox carts, two tumbrils, and the two scoops, continued steadily at work about a fortnight until we got about 10 feet below the surface, the marl becoming richer at every furrow of the plough (the only implement used in my pits from that time to the present,) when, to my great vexation, an infernal muskrat inundated my pit, and put an end to my labors, where, for want of a pump to drain it, they have not been renewed. In the mean time, however, the scoops, (such as are used on turnpikes, and to which there is nothing equal for the purpose,) had extracted as much as the 4 carts could haul out in a month, and to sufficiently marl about 40 acres, at the rate of 500 bushels to the acre. With the aid of a borer I have since found marl of the same description in three sites on my farm, and have employed all my leisure time in hauling it out, though owing to frequent long absences from home, and various interruptions, it has not been as rigorously prosecuted as I could have wished, the whole surface marled not much exceeding 100 acres. It is a poor blue marl, with a proportion of small shells, not exceeding, at most, 15 per cent.

and unless exposed to a winter's frost before turned in, would remain in lumps for years. My present practice is to put it on the young clover in the fall, and suffer it to remain in small heaps until the spring following.

My system of manuring too, both in its preparation and application for the last 6 years, has been materially changed. Several experiments were instituted with the view of ascertaining the comparative merits of ploughing in manure with the crops of corn and wheat, and leaving it scattered on the surface of the latter. Acres manured in these modes, have been staked off, and the produce designed to be measured; but owing to causes above hinted at, the results prove nothing with precision, and only leave upon my mind an impression in favor of surface manuring. On what even is the most unfavorable soil, it insures a crop of clover, whilst on young clover it doubles its value, and in no mode adds so much to the improvement of a light soil. The manure made in my stables and farmyards, is, during the fall, and winter, and spring, carried out upon whichever crop happens to be most convenient, whilst that which has been spread upon the clover receives a dressing of marl. Owing to a press of other work, the marl which was carried out upon about 30 acres of clover last fall, with the exception of a small quantity scattered upon a portion of the manured land, remains in piles, and the clover upon that portion is distinguishable from where I now write, at the distance of half a mile.

Instead of wasting my manure as I did for many years, and indeed until lately upon poor and sandy land, I never apply it now to any, which, with its aid, will not produce clover, unless, indeed, it happens to be convenient to marl, or a great "eye-sore." My crops of hay, which have been abundant, have, of course, added considerably both to the quantity and quality of my manure, which chiefly applied as a light top-dressing in the above-mentioned modes, has annually sufficed for about 30 acres, for the last five or six years, and has extended the clover to a corresponding degree, and I am encourged to hope that a few years more will afford a complete vesture to all my fields, with the exception of a few intractable spots. I regard my marl, poor as it is, as the chief hand-maiden of my improvements, and as the guardian of my manure, with which it shall ever go hand in hand.

Before I quit the subject, I would strongly recommend, on the score of economy, in all cases where the superincumbent earth is not too deep, the denudation of a sufficient area to admit of the use of the plough, and scoop, which implement, worked by two good mules, will, from a depth of 10 feet, and at an angle of even 45°, extract from a pit a mass incredible to one who has not tried it. The inconvenience resulting from an accumulation of water is thereby avoided, the marl is dryer and lighter, the carts are more expeditiously loaded, and the ascent from the pit being avoided, can carry much more.

I think it is about eight years since the termination of the comparative experiment of the systems of three and four shifts, the different results of which I have stated, so far as product enabled me to judge, as stationary or null; and I have stated, in a loose way, I believe all, or nearly so, the elements which have entered into any subsequent improvement, to ascertain which, we will now take the crops as a common measure for the two periods. Previously to the above-mentioned period, the crop of corn, as nearly as I can now ascertain, averaged between 800 and 900 barrels; the wheat crop, I am sure, I do not underrate, at 1000 to 1200 bushels. The rate of progression I cannot ascertain, but the crops of the two last years have been 1200 and 1400 barrels. The wheat crop has hardly increased in an equal ratio, and is too uncertain with us to form any basis for calculation. This, compared with what others have done upon a more propitious soil, would seem to be a meagre result, from the prosecution. for twenty years, of what are considered improving systems; for I am inclined to fear that in the apparent reference of the whole result to the latter period, I have given it credit for some accumulated but dormant capacity created, though scarcely exhibited during the former. The truth is, that any improvement of soils, light and poor, in its first stages, must, without extraordinary means, be imperceptibly and discouragingly slow; nor does discouragement give place to hope, until having crept to the first stage, with an agreeable surprise, we find ourselves prepared to advance almost *per saltus*. It is indeed the "first step which costs." Poverty must be drugged until she gets upon her legs, after which the *vis medicatrix naturæ* will carry her onward to fertility.

I have thus, Mr. Editor, though not briefly, I fear obscurely, proposed to the members of our communion, my humble experience, though without presuming thereupon to ask the honor of baptism. Indeed, I have no higher aspiration than to be able at some day, worthily to share it with them, when, with a pride not less than that which elated a brother painter, when, on beholding the Transfiguration of Raphael, he exclaimed, "I too am a painter." I might with truth say, "I too am a farmer." In the meantime, you will excuse me for borrowing from an old favorite, the paragon of his species, "who, true to all beside, to it alone was false," his name.

OLD TYRO.

P. S. In looking over the foregoing hasty sketch, I discovered that, in the enumeration of elements of improvement, I have pretermitted the regular use of clover and plaster, the most important of all, and no less so, (for to its use, I chiefly ascribe my late success,) the use of the harrow, after sowing—a process a little startling in appearance, but beneficial even to the wheat, and vital to the clover, especially in sandy land, which cracks little with frost. After sowing a light field, in February, 1833, a hot spell of weather prevented the use of the harrow, until the clover had sprouted, all of which was killed by a spell of severe weather. Finding, on examination, a considerable portion of seed still lying unsprouted on the surface, the use of the harrow gave me a very tolerable stand. I have tried it in the fall; the first time, though much killed out by the unusual severity of the winter, yet I think the increased vigor of what remained, made amends for what was lost. Some which was sown the middle of last August on a hill-side, with a southern exposure, on rye, look decidedly better than any which I have ever had at this season.

From the Hampshire Gazette.

RECEIPT FOR MAKING COLD SOAP.

The leach tub or hogshead must be covered at the bottom with straw and sticks—then put in a bushel of ashes, then two or three quarts of unslaked lime, upon which you must throw two quarts of boiling water to excite fermentation and slake the lime; put in another bushel of ashes and as much more lime and water, and continue to do so until your vessel is full; put in hot water till you can draw off the lye, after which the heat of the water is not of much consequence. You must have, at least two thirds of a bushel of lime to a hogshead, if you wish your soap to be made quick; one hogshead of ashes will make two barrels of soap. When you draw off your lye, you must keep your first two pailfuls by themselves, and the next two in another vessel, and the third two in another vessel still: then weigh 29 pounds of clear strained grease, or of scraps, without straining, 32 pounds, put into a kettle with three pounds of rosin; then pour over it one pailful of lye from the first drawn vessel, and one from the second drawn vessel; put it over the fire, and let it boil twenty minutes—be particular to add no lye over the fire, but swing off the crane if it is in danger of boiling over; put it into your barrel, and add one pailful of lye from the third drawn vessel, and give it a thorough stirring; then weigh your grease for another barrel and take the lye remaining in the vessels, in the same manner as for the first barrel; then draw off your weak lye, and fill up the vessels as fast as possible, remembering to put half to each barrel, that they may be equally strong. If your leach run through fast, you may have your barrels full in an hour, and so hard that you can hardly stir them. You must stir it after you begin to put in your lye, till your barrel is full. Fourteen quarts of melted grease is the quantity for a barrel.

[Many families in this town make their soap according to the foregoing with perfect success.]

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